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ITS
CAUSE AND TREATMENT

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PAUL B. HOEBER, 67-69 East 59th St., N. Y.

CANCER

ITS

CAUSE AND TREATMENT

BY

L. DUNCAN BULKLEY, A.M., M.D.

Senior Physician to the
New York Skin and Cancer Hospital, etc.

VOLUME

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To

THE GOVERNORS

of the

NEW YORK SKIN AND CANCER HOSPITAL

whose kind appreciation of and assistance to the author
in his clinical work in their institution have
done much to encourage him and to
promote the interest of the pro-
fession in the branches of

DERMATOLOGY

and

CANCER

this second volume
is inscribed

PREFACE

Two years ago the present writer ventured to put forth a small book in which cancer was considered from quite a different standpoint from that commonly held by the profession and laity. The kindly reviews of the medical press indicated that, while this was antagonistic to accepted views, there was warrant for such an investigation, in view of the steadily increasing mortality from cancer all over the world, under the present mode of purely surgical treatment.

In these two years there has been very active study of cancer together with a campaign of education in regard to the desirability and necessity of operating very early in the disease, and consequently an increased surgical activity. In spite of

all this, or possibly on account of it, the mortality from cancer during 1915 has been appreciably higher than the average yearly death rate during the preceding five years. It would seem, therefore, that there was increasing necessity for the study of the conditions which cause the disease, as found in the human system, rather than an increased study of pathological specimens and experimentation on animals.

During these two years the writer has sought to understand the disease better by constant clinical observation in private and public practise and by wider acquaintance with literature, and has been only strengthened and confirmed in the views which were set forth in the former small book, and which he has held and practised for over thirty years.

With some care he has prepared a second series of lectures which were given to practising physicians attending the regu-

lar Wednesday afternoon clinics at the New York Skin and Cancer Hospital in November and December, 1916, and which are now submitted to the profession at large.

The reasons for presenting the medical aspects of cancer were given in the former volume, also the hesitancy I felt lest, from an imperfect carrying out of the necessary lines of internal treatment, harm might be done or time lost in which there might possibly be some gain from surgical treatment.

But the more I have studied cancer in the living and dying subject, and the more I have tried to compass literature and analyze statistics, the more have I felt compelled to push forward a campaign of education in regard to the basic causes of the disease, ever with the thought of prophylaxis, by inculcating right living.

It has been painful to me to present the mortality statistics in such an unfavorable

light as is seen in the following pages: but truth is truth and truth must prevail.

No one can study carefully the remarkable book of Hoffman on "The Mortality Statistics from Cancer Throughout the World," and Williams' "Natural History of Cancer," and Wolff's "Die Lehre von der Krebskrankheit," and the special volume concerning "Mortality from Cancer and Other Malignant Tumors in the Registration Area of the United States," recently issued by the Bureau of the Census, without feeling that something more should be attempted to arrest the progress of this direful disease.

This seems all the more necessary and proper in view of the gratifying decrease of mortality which has been obtained in tuberculosis, of 27.8 per cent from 1900 to 1915, by diligent and intelligent medical supervision.

The problem of cancer is indeed a great one, but surely it is not to be solved by

greater activity along the lines under which its mortality has steadily risen 28.7 per cent during the same period just mentioned, in which tuberculosis has fallen so greatly. If this death rate of both diseases should continue the same for fifteen years more, cancer would outstrip tuberculosis in its actual fatality. Reason would seem to indicate the necessity of a radical change in our point of view and a complete change in our line of treatment.

In the text of these and former lectures I have endeavored to show why and how cancer should be regarded from its medical aspects, and to illustrate by a few cases some of the results which could be obtained from this line of procedure. There is absolutely no claim or suggestion that the cancer problem has been solved, but only an aim to put the *real cancer problem* in such a light that others might follow and develop the subject in a manner fitting to the very great importance of the end so

strongly desired by all, namely, the checking of the steadily rising morbidity and mortality of cancer.

Laboratory studies are of practical value as they supplement and enlighten clinical observation. The microscope and test tube have accomplished much for medicine and with animal experimentation have undoubtedly rendered inestimable service in its scientific advancement. But divorced from the practical study of patients they may fail in the ultimate end desired. In these and the former lectures I have endeavored to indicate certain lines of scientific investigation along which much more laboratory effort is desirable, in order to determine more definitely the metabolic and blood conditions which lead up to cancer. These I have attempted to follow to a limited degree in many cases, and found them of great service in their management.

In some of the reviews of the former

volume some adverse criticism was given on account of the absence of microscopic findings confirming the diagnosis of the cases reported. I explained at the time that any attempt to excise portions of tissue for such study would at once endanger the patient and imperil the success of treatment, by giving occasion to metastases, from the opening of blood vessels and lymphatics. This matter is treated of more fully in the present lectures. It is to be remembered that the vast majority of operations for cancer are undertaken upon a purely clinical diagnosis, and it may be undeniably stated that not one-half of them are confirmed subsequently by competent microscopic evidence, except, of course, in properly equipped hospitals. In some of the cases now presented pathological proof has been presented, while in every one the clinical signs were so unmistakable that no one could possibly doubt the correctness of the diagnosis.

A number of reviewers of the former volume regretted that fuller and more definite statements had not been made in regard to the exact diet and mode of treatment employed in the cases reported. I had explained that it was very difficult to develop all this in the brief compass of a few lectures; indeed I may now say that it would take many times the space and time which could be given to it to develop fully all the possibilities and requirements of a dietary and medicinal treatment in every case. The object rather was to inculcate the basic idea of the true causation of cancer, leaving it to the practitioners present to carry out the measures calculated to reach the desired end. In order to make matters very clear I may occasionally have repeated some things said in the former lectures, and some repetition may be found in these successive lectures; but this will be pardoned when it is considered how necessary repetition often is in order to es-

tablish correctly a new thought. The cases were given as illustrations of what could be accomplished along the lines indicated.

In the present lectures I have endeavored to carry the thought still further and to develop the fundamental principles on which treatment and prophylaxis are to be based. I have also been much more explicit in regard to diet, and have given the exact dietary which has been used with advantage in very many cases in private and hospital practise. In regard to medical treatment I have also been more definite, although it would be quite impossible to indicate all the different remedies which those and other patients have taken over varying periods of time, to meet different requirements of the system and individual peculiarities. I think and believe, however, that sufficient data are given to enable the competent and careful physician, who is able and willing to give sufficient time and adequate attention to these cases,

to accomplish the same results, provided he has thoroughly mastered and applied the matter contained in these two small books.

I fully realize the responsibility I have undertaken in gathering and revealing the evidence of the unsatisfactory results of the manner of regarding and treating cancer in years past, and certainly would not have done this were I not so strongly assured that there was something better to offer. How far I am right in my thesis I now leave to the kindly judgment of my professional brethren. My only hope is that I may, in some measure, have assisted in stemming the tide of the fearful ravages made by cancer, and that others may investigate still more deeply along the lines of its medical aspects, with increasingly satisfactory results.

L. Duncan Bulkley.

January, 1917.
531 Madison Ave.

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CANCER
ITS
CAUSE AND TREATMENT

LECTURE I

CANCER AS A MEDICAL OR SURGICAL DISEASE

In my lectures given here two years ago I considered, as far as I could in the time allowed, the nature of cancer,[1] and the evidence in favor of its being a medical rather than a purely surgical disease; and in order that the trend of what shall follow may be clearly understood, brief reference may be made to some of the principal points studied and developed in the preceding lectures. To this end I may restate the conclusions presented at their close, as de-

[1] "Cancer, Its Cause and Treatment," Hoeber, 1915.

veloped in the lectures, perhaps with some alterations or additions which two years' further study, observation, and treatment of cancer may suggest.

1. Cancer is but a deviation from the normal life and action of certain of the ordinary cells of the body, which, for some reason, difficult to understand, take on an abnormal or morbid action: with this there is a continued tendency in them to a malignancy which invades contiguous tissue, associated with a pernicious anemia which in the end tends to destroy life.

2. There is some reason to believe that this diseased action first takes place in what are known as "embryonic rests" or pre-natal, wrongly placed tissue elements. These latter, however, are now shown to exist in every individual in many localities, but the reason why at some particular time they take on this malignant action, and form cancer, has not yet been satisfactorily explained.

3. Cancer is *not* wholly due to traumatic causes; although these may play a not inconsiderable part in its occurrence in certain localities and cases.

4. It is pretty conclusively decided that cancer is *not* caused by a microörganism or parasite; although various forms of these have been found in connection with the disease, and each has been claimed as the cause of cancer.

5. It is known clinically and experimentally that cancer is *not* contagious.

6. *Nor* is it hereditary in any appreciable degree; although certain rare instances have been reported in which such seems to be the case, and though some tendency in that direction has been demonstrated in certain strains of mice.

7. Occupation has *not* any very great influence on the occurrence of cancer; although it is more frequent in some pursuits than in others.

8. Cancer is *not* altogether a disease of

older years; although its incidence is greatly increased with advancing age.

9. Cancer does *not* especially belong to or affect any particular sex, race, or class of persons. It is, however, more frequent in females than in males, although of late years the proportion in the latter is steadily rising.

10. Cancer is *not* confined to any climate, location, or section of the earth, but has been observed in all countries and climates, though with different frequency.

11. *No* single cause of cancer has yet been demonstrated; nor is it likely that this will ever be the case, as experimental and other investigations have covered almost every possible line of research, with only *negative* results.

12. The exclusion of almost every other possible cause of cancer, as well as its pathological history and biochemical studies, all lead, therefore, to deranged metabolism as the only remaining possible etio-

logical element. This latter acts by inducing changes in nutrition, and these in turn depend on diet and the proper or improper action of the secretory and excretory organs; these latter may, still further, be affected by nervous influences.

13. While the biochemistry of cancer does not as yet throw very great light on its true nature and cause, enough has been determined to show that the morbid changes in the cells are largely associated with deranged metabolism.

14. The blood in advancing cancer manifests changes which indicate vital alterations in the action of the organs which form blood and control the nutrition of the body and its cells.

15. Clinical and experimental evidence demonstrate that the secretions and excretions of the body exhibit departures from normal; these, while not wholly pathognomonic of cancer, still indicate metabolic disturbances which involve the nutrition

of the cellular elements, and these disturbances are of importance.

16. The evidence seems certain that the cancer mass, when fully developed, secretes a hormone or poison which tends to augment its own growth, and hastens the lethal progress of the disease.

17. The mortality from cancer is undoubtedly on the increase in every portion of the globe, in spite of the assiduous activity of the laboratories and the immense advances in surgical procedure.

18. This increase in mortality is seen to vary inversely, and in about the same proportion, with the steadily diminishing mortality of tuberculosis, under recent careful medical guidance.

19. The increase of cancer mortality is found to follow closely along the lines of modern civilization.

20. The extension of cancer appears to depend largely upon the altered conditions of modern life, particularly along the lines

of self-indulgence in eating and drinking, and indolence.

21. The augmentation in the consumption of meat, coffee, and alcoholic beverages in civilized communities is seen to be coincident with the great and proportionately greater augmentation of the mortality from cancer.

22. The nerve strain of modern life seems to be an element of importance, both through disturbance of metabolism and by direct action on morbidly deranged cells.

23. No single remedy for cancer has been, or will probably ever be, discovered, since it is conceded that there is no single cause for the disease. The history of cancer abounds in the heralding of various vaunted remedies, quack and other, including sera, whose employment has only ended in the disappointment of medical men and in the deluded hopes of innumerable sufferers.

24. Modern surgery has materially im-

proved the statistics relating to the immediate results of operative procedures; but the total achievements along this line are insignificant when compared with the steadily rising death rate, and ultimate mortality of about 90 per cent of those once afflicted with cancer.

25. Surgery has had, and may yet have, its function to perform in removing some of the *products* of the constitutional state causing cancer, more or less efficiently, curing some patients and prolonging the life of others; but from past experience it can never hope to lessen the morbidity of cancer. The reason for this is that it attacks a symptom only, and not the underlying cause.

26. The X-ray and radium, as also caustics, are in the same position as surgery, and can do little more than cause to disappear, more or less temporarily, some of the lesions which have developed from causes which they cannot reach.

27. With all these means the measure of success, aside from the technical skill of the operator, depends largely on the duration and the extent of development of the malignant growth before treatment: the earlier such local treatment is undertaken, other things being equal, the greater the possibilities of success.

28. The same is true in regard to the treatment of cancer by dietary and medical means. The earlier the morbid constitutional process, or state, leading to tumor formation is attacked by proper dietetic, hygienic, and medicinal measures, the greater the promise and expectation of success, present and permanent.

29. The cure and prevention of cancer, therefore, and the checking of its increasing occurrence and mortality, depend largely upon the early adoption of such measures as will limit the agencies which induce the formation of the new growth: these are certain derangements of the

body juices which tend to bad nutrition and disturbance of the action of the body cells.

30. The simple life, with the avoidance of the dietetic and other causes which have been found to induce cancer in nations and individuals, promises the best hope for the arrest of its rapidly increasing development and mortality throughout the world.

31. It is more than possible, however, that the long continued operation of many baneful causes has produced such a degeneration of tissue in the human race that it will take a generation or more of proper living to make the beneficial impression on the general occurrence and mortality of cancer which is so longed for.

It is quite impossible and unnecessary to elaborate again the facts upon which these conclusions are based, which were given very fully in my previous lectures and book; but we may briefly consider some of the features just presented, and some of the evidence why cancer should be consid-

cred from a medical rather than a surgical standpoint. For it must be conceded that both the general medical profession and the laity still regard the disease as belonging to surgery, and look only to the knife for any hope in its treatment. In spite of all that has been done the present outlook for the checking of its rising mortality by this means, and for the prevention of can cer, is bad indeed, as will be shown in a later lecture.

But, gentlemen, many great surgeons, in past and present time, as quoted in my former lectures, have acknowledged verbally and in writing their inability to cope with cancer as a disease, and have recognized time and again that they operated only because they knew of nothing better to do. Often it is acknowledged that the operation is only palliative, in the hope, alas, how often futile, that some good might result from it, in the chance that the dread disease would not return. We shall see

later, when we come to study the mortality of cancer in various locations, and an analysis of surgical statistics, how slight the foundation is for such hopes.

Both in the past and present times many surgeons of eminence, well acquainted with the disease, whom I quoted in my former lectures, have also more or less casually expressed the conviction that there was some deep-seated constitutional cause of cancer which baffled recognition, but which must have to do with the diet or mode of living of those afflicted. The most recent of these is Dr. William J. Mayo, who has spoken in no uncertain terms along this line, in a recent address as President of the American Surgical Association. And yet how relatively little intelligent effort has been put forth to discover and amend these conditions, and to remove the bodily derangement which eventuates in the formation of the foci of disease which later become malignant and form what is called

cancer, or to modify the blood changes which ultimately destroy life!

In a long experience I have seldom, if ever, come across a patient with cancer who had had any intelligent and prolonged attempt to check its development by dietary, hygienic, and medicinal means; invariably the knife, X-ray, and radium have been the only measures under consideration. Also, after an operation the patient is dismissed, or watched for a recurrence and again operated on, with no prolonged effort to so modify the constitution that the same causes shall not reproduce the malady in the same or other localities. And yet I have narrated to you cases of undoubted cancer, verified by competent surgeons, who urged instant removal, which had entirely disappeared without operation under the line of treatment detailed, and who remained in perfect health for many years, sixteen in two instances. I also reported cases illustrating the beneficial result of

dietary and medicinal measures in cases recurrent after operation. This matter will be more fully considered in a later lecture, with further illustrations.

We may now consider some general matters bearing on the question of a medical rather than an exclusively surgical aspect of cancer.

The founders of the Index Medicus placed cancer among the diseases of metabolism, along with gout, obesity, chronic rheumatism, diabetes, and a few conditions of minor importance. This grouping of cancer in no wise interferes with the idea that a chronic local irritant may be the *exciting* cause of the *local* development of the tumor, which becomes malignant, in any particular situation; any more than what is observed in the case of late syphilis, where a gummy tumor or a bone lesion may appear at a point of injury, or where gout will develop in a joint which has been bruised.

But it does show that broad medical thought has long recognized that cancer is not a purely local disease, but that it arises from some disturbance of nutrition, tending to localize in some particular spot, even as a neuralgia will occur in some special nerve and be reached, not by local measures, but by those of a general nature. Repeated casual observations have often been made by clinicians, and even by surgeons of prominence, of the apparent relations between cancer and gout or rheumatism, and also diabetes, and all recognize the rebelliousness of cancer when it occurs in connection with obesity. The late Dr. John B. Murphy was very strong in regard to this latter point. The constant occurrence of cancer in rheumatic individuals is a very striking feature, which I observe almost daily.

It is worthy of remark that cancer begins to appear at a wholesale rate at the age when metabolism begins to slow up,

and some time after the body growth has become fully established. At this period people are apt to lose the balance between physical effort and the intake of food, eating as much as ever, perhaps more, while becoming more sedentary. At the same time the emunctories become less active. The various affections of metabolism now tend to appear and are associated with imperfect oxidation, or diminished tolerance toward certain ingesta. It is interesting to note that in a study of many thousand cases of eczema I found the disease to be actually more frequent, in proportion to those living, between the ages of 50 and 55 than at any other period of life after the infantile period, or the first five years of life; just about the same time when cancer is most common. And the constitutional conditions at the bottom of eczema are very much the same as those in cancer.

Patients with a cancer just beginning will often, or even generally, seem to be

in excellent health. It is indeed remarkable to observe how commonly patients with beginning breast cancer will seem to be in a splendid condition of health. They are ruddy and blooming in appearance, and when the lump is first discovered it is hard indeed to believe that if the erroneous life processes which caused the cancerous lesion to develop are not checked, the patient will before long succumb to the direful disease. Williams remarks that "such types are indications of hypernutrition."

But a most careful study of these patients in every particular will so constantly reveal such errors of life and derangements of metabolism that these must be looked upon as contributing causes, at least, to the development of the local condition which later becomes malignant; in the same way as the patient will appear to be in blooming health just before an attack of acute gout. For when these conditions are rectified by proper dietary and medici-

nal measures the local cancerous condition not only ceases to develop but actually disappears without surgical removal, as I have repeatedly shown you. These errors and derangements are not commonly evident on a superficial examination, and often are recognized only after very painstaking search, and re-search.

We have not yet arrived at such a clear knowledge of metabolism as to understand just where the fault lies in these cases of seeming perfect health, with the beginning of a neoplasm which may eventuate so disastrously. But we do know that what passes for good health is often fictitious, and is quite compatible with even grave disorders of various kinds. It is more than possible that the apparent well-being of the patient with beginning cancer, which is often observed to be associated with uricacidemia, points also to the correctness of our thesis in regard to its internal causation. As remarked in one of my former lectures, quot-

ing Ribert, "no one has ever seen the beginning of mammary cancer" and no one will ever see the beginnings of cancer of internal organs.

But, whatever may be thought of Haig's theories or statements regarding uric acid, there is no question but that many maladies of many kinds have their origin in the concatenation of processes which has long been recognized clinically as lithemia. Personally I believe that sooner or later it will be generally recognized that the starting point of cancer occurs in some cell or cells, previously normal, probably as the result of local irritation, in which there is a deposit of some of the elements of faulty nitrogenous partition, induced by undue ingestion of animal protein: and that the malignant, reproductive process in the cells is kept up by a continuance of the same supply of imperfectly disintegrated nitrogenous matter.

The condition of the urine furnishes a

most invaluable indicator and guide as to the systemic derangements and their correction. This has not reference to the presence of sugar, albumin, or casts, but rather to other features, reflecting the manner in which metabolism is performed. This subject was gone into pretty thoroughly in my former lectures, but must be briefly considered here, because of the great importance of the subject.

It is well known that, while the products of the digestion and disassimilation of carbohydrates and fats pass off by the lungs, generally without harm, those of protein and salts are eliminated by the kidneys, and may be the cause of various systemic derangements. The urine, therefore, when most carefully analyzed volumetrically, exhibits in the clearest possible manner how the metabolism is carried on and where the error lies.

From a study of hundreds of complete volumetric analyses of urine in dozens of

cancer patients, both in the very early and late stages of the disease, I have found that this excretion almost invariably exhibits departures from normal which are significant.

First to be mentioned is the relation of the total solids excreted daily to the body weight of the individual; for it is evident that a person weighing 200 pounds should pass off more than a smaller person. The following table represents fairly well the total solids that should pass daily in order to maintain a healthy equilibrium:

Body Weight	*Total Urinary Solids*	*Body Weight*	*Total Urinary Solids*
90 pounds	500 grains	150 pounds	920 grains
95 "	535 "	155 "	955 "
100 "	570 "	160 "	990 "
105 "	605 "	165 "	1025 "
110 "	640 "	170 "	1060 "
115 "	675 "	175 "	1095 "
120 "	710 "	180 "	1130 "
125 "	745 "	185 "	1165 "
130 "	780 "	190 "	1200 "
135 "	815 "	195 "	1235 "
140 "	850 "	200 "	1270 "
145 "	885 "	205 "	1305 "

These figures do not represent much active exercise, and with increased bodily exertion the solids passed should be more. Men excrete about one-tenth more than women; there are also less urinary solids passed with advancing age, and about five per cent may be deducted for each ten years after forty.

The estimation of the total solids is easy with Haines' modification of Hasser's method. *Multiply the last two figures of the specific gravity of the urine by the number of ounces voided in 24 hours, and add ten per cent to the product.* Thus, if the amount passed in 24 hours was 36 ounces with a specific gravity of 1.021, it would be $36 \times 21 = 756 + 10$ per cent $= 832$ grains of solids in the whole amount of urine excreted that day. By comparing this with the table it can be readily ascertained if the amount is above or below the normal standard for the body weight of the patient. For many years I have employed

this method of determining the urinary output in hundreds of patients with various diseases of the skin and cancer, and have found it of inestimable value. It is understood, of course, that by dietary and medicinal measures the urinary solids are to be brought up to and maintained at normal.

The actual acidity of the urine, as measured by the oxalic acid and phenolphthalein test, is also of the greatest importance. This is not difficult of application and is daily used in my laboratory; the litmus paper test is of relatively little value in comparison with an actual chemical measurement. Thus, with an average standard of 300 we not infrequently find an acidity of 500 or 600, or even 1000 or more, or it may sink to 200 or 100, or even be strongly alkaline. In cancer I have striven, by diet and remedies, to keep it a little below normal, as it has been shown that the blood in this disease exhibits a constantly increas-

ing tendency to diminished alkalescence, or, wrongly called, increased acidity.

But further and very careful volumetrical urinary analysis is very important to determine and maintain the metabolism in its proper condition. Time does not permit such an elaboration of this subject as might be desired, and I can only call your attention briefly to some of the points brought out in my former lectures.

Many observers have found the nitrogenous disintegration very imperfect in cancer cases, and oxyproteic acids are increased and even that in very early cancer. An increase of amino-acid nitrogen was found by Reid in practically every case studied. Others have found an increase in colloid nitrogen, to more than double the normal amount, and also increased elimination of xanthin and urinary ammonia; so that all observers testify to a disturbed nitrogen partition in cancer. The elimination of urea is certainly greatly

diminished, even in early stages and when on a full diet, as I have almost invariably observed.

The sulphur partition is also found to be imperfect, in new and old cancer cases, and even a great increase in the urinary discharge of sulphates is constantly noticed in my analyses. Associated with these errors in the nitrogenous and sulphur element is the very common and persistent increase of indican, showing stasis in the small intestine, with bacterial putrefaction.

Imperfect intestinal elimination is constantly observed in cancer cases, both habitually and in the very early, formative period, and also later, even before any recourse to morphin, which, of course, heightens the trouble. In recording the statements of these patients I have been so struck with the almost invariable history of constipation before the first appearance or suspicion of the cancer that I cannot help feeling very strongly the possibility

that the toxins produced by the millions of microörganisms, generated through intestinal stasis and fecal putrefaction, play a great part in the production of that blood dyscrasia which culminates in the formation of the malignant new growth.

I mentioned to you last year that in hundreds of tests of the saliva in cancer patients the reaction was found to be acid almost invariably, until corrected by dietary and other treatment. I have this test made and recorded daily, half an hour before meals and half an hour after meals, on my cancer patients in the New York Skin and Cancer Hospital. I have also the urine volumetrically analyzed each week, and the results all tabulated in columns on the history sheet, so that the changes may be compared weekly, in regard to each constituent, as treatment progresses. The same is done with the weekly studies on the blood, which I hope to present in full before long.

I think, gentlemen, that from what I have

said you can see that the medical aspects of cancer loom up pretty large, and yet we are only beginning to study the disease along these lines. We see, thus, that cancer is not primarily a surgical affection, and that the mere ablation of an offending portion of the body which has become diseased can never preclude a new portion from becoming affected, or prevent a recurrence in the same location; indeed, this often seems to be stimulated and increased by the trauma and by the deranged lymphatic and vascular circulation caused by the operation and the dissemination of actively growing cancer cells through these channels. This will appear more fully later when we come to study the increasing mortality of cancer during these later years of active surgery, and when we come to analyze the actual reports of operative procedures.

I hope, gentlemen, that by these lectures I may succeed in satisfying your minds

that if anything is to be done towards staying the steadily rising frequency and increasing mortality of cancer, it must be by carefully wrought out medical means, and not by the knife.

LECTURE II

INFLUENCE OF SEX, AGE, OCCUPATION, RACE, CLIMATE, AND FOOD ON CANCER

While cancer is no respecter of persons, and affects all, rich and poor, old and young, male and female, there are some interesting features regarding the disease as it occurs under various conditions which are worthy of consideration.

We have seen in the former lecture that cancer is not a definite something, from without, that attacks the human frame, but that it is only a faulty development and action of certain body cells, which were once normal, with a steady decline in bodily health which tends to a fatal issue in a very large proportion of those once affected with the disease.

We have seen that the cancer patient,

both in the very earliest stages and during the whole period of the disease, gives evidence of departures from the ideal normal life, and presents functional disorders of various organs, with derangements of metabolism; these point to errors of nutrition, which latter are of significance in connection with the development and continuance of the malignant disease. The conclusion offered was that cancer is a medical affection, due to systemic causes, and that the simple surgical excision of a certain diseased portion cannot be expected to check or remove such a malady, or to prevent recurrence. And this has been abundantly demonstrated by the history of the disease, with its steadily increasing mortality under increasingly active surgical treatment during the last fifteen years, as was shown in my former lectures and will be further illustrated later.

Recognizing, then, that cancer is a great and widespread disorder of nutrition, let

us consider some of the facts regarding its extension and some of the influences concerned in its production.

Sex.—Cancer is much more frequent in females than in males. In the United States Mortality Reports for 1914 there were 31,138 females to 21,282 males; thus, in a total of 52,420 deaths from cancer 59.4 per cent were in females, with a preponderance of 9,856. This excess is largely due to cancer of the breast, from which there were 5,423 deaths, and cancer of the female genital organs, causing 8,152 deaths, of which 7,470 were from cancer of the uterus.

The death rate in males, however, seems to be increasing of late years; in the United States in 1912 males formed 39.7 per cent; in 1913, 40.1 per cent; and in 1914, 40.6 per cent. In England, according to Williams, the proportion of males to females is increasing much more rapidly. This greater mortality of males is due to the

greater number of deaths from cancer of the stomach and liver, buccal cavity, and skin. In 1914 there were 19,889 deaths from cancer of the stomach and liver, or 37.9 per cent of the whole number; of these 10,122 were in males to 9,767 in females, or an excess of 355 males, whereas in 1912 the females were 87 in excess. In the United States the cancer death rate for males has increased since 1901 31.8 per cent and for females 25.3 per cent.

Age.—Carcinoma is exceedingly rare under 20 years of age, most malignant tumors at that period being sarcomata. After 25 the number of deaths from cancer about doubles each five years up to 40, and then increases steadily, until the actually greatest number of deaths, 6,909 (3,071 males, 3,838 females), occurred between 60 and 64 years of age, after which they decreased steadily; there were 267 deaths at 90 and over, 8 of them being 100 years and over. At no period did the deaths of

males exceed that of females, and from 35 to 39 years of age the latter were almost three times that of males.

Occupation.—Many attempts have been made to trace the influence of occupation upon the incidence of cancer, but thus far very little of practical interest has been demonstrated; the difficulties concerning this investigation are immense, owing to absence of essential and accurate data. There have been many lists presented, but few of which agree as to details, and all need to be corrected as to the proportion of those living at different ages. There is also the question as to the effect of local or general agencies; thus, as to the result of local injuries on the skin, and also in regard to other agencies, whatever they may be, which produce internal cancer; for tables of occupation do not generally refer to sex, age, or location of the disease.

First, to dismiss the question as to the direct result of local injuries in inducing

cancer of the skin, which, at the most, caused only 3.7 per cent of all cancer deaths in 1914, we may cite a few instances in which this appears to be pretty well established.

The occurrence of epithelioma as a direct result of repeated and protracted exposure to X-ray is familiar to all, and is particularly interesting because it occurs commonly among younger persons, and at a time of life when epithelioma is rare; and especially also because the X-ray is constantly effective in curing epithelioma. The rarity of epithelioma resulting from X-ray, considering the enormous amount of exposure which must have occurred in making and using X-ray tubes, implies, however, that there must be some other cause also at work. It has been urged, therefore, that the skin tissue being altered and weakened from repeated and protracted exposure to X-rays, more readily falls prey to some of the chemical or other ir-

ritating agencies which have been observed to be followed by epithelioma.

Time does not permit even a mention of the various elements, which are many, that have been credited as excitants of cutaneous epithelioma; but brief allusion may be made to one which formerly attracted much attention, mainly in England; this refers to chimney-sweeps cancer, the mortality from which was at one time at least 5 times greater than that from cancer in males generally, at the same age. This is now, however, of relatively infrequent occurrence, owing to the adoption of other methods of cleaning chimneys. The epithelioma, which more commonly developed on the scrotum, was believed to be due to the long continued irritation caused by the constant presence of soot on the part; other products of combustion and tar derivations have also been accredited with the same result.

The question of the influence of occupa-

tion along other lines is really more interesting, because more obscure; but a careful study of available data tends to show the correctness of the thesis on which my former lectures and these are based. This, as you know, is that our so-called advancing civilization, with all its errors of life, in many directions, is at the bottom of the steady increase in the mortality from cancer.

One of the most interesting contributions to this was the investigation made by Dr. Latham, Registrar-General, in a study of cancer returns in England; this showed that the mortality from the disease was more than twice as great among well-to-do men having no specific occupation as among occupied males in general, the respective mortality ratio being 96 for the former and only 44 for the latter. The same observation has been made elsewhere.

Moreover, it is reported from several reliable sources that the death rate from can-

cer in many cities is proportionately greater among the rich and those in easy circumstances than among the poor, wage-earning element of society. This would seem to show that occupation in general acts favorably against the development of cancer. This fact is quite understandable when we consider that those engaged in active work are less liable to suffer from the effects of gluttony and indolence, with their concurrent metabolic disturbances, than the well-to-do with ease and luxurious habits. It is remarkable, however, that in asylums, homes for the aged, prisons, convents, monasteries, etc., where the inmates are relatively unoccupied, many writers confirm the fact that cancer is very seldom seen; but this again is explained by the simple and frugal diet enforced, with very little meat, which agrees with our thesis.

Statistics from life insurance companies show that cancer is decidedly more com-

mon among persons of over-weight than among under-weights.

In regard to the occupations of those dying from cancer it is interesting to note that standing among the highest per 100,000 population, in English statistics, come brewers, inn-keepers, and butchers, whose metabolism can be greatly disturbed by alcohol and meat; also indoor servants are more apt to be affected, while those of more or less sedentary occupation, such as school teachers, clergymen, physicians, and tailors, likewise stand very high on several lists. On the other hand, those engaged in active physical exercise, such as miners, farm laborers, carpenters, blacksmith, mail-carriers, and others, are among those least frequently attacked.

Race.—Cancer has been observed in every race, though the proportion of cases is observed to vary greatly among different peoples; but it is interesting to note that it is universally agreed by those that

have studied the subject that the difference in frequency relates very largely to the degree of civilization involved. The blond Nordic race, however, seems to be more susceptible to the disease than the darker races, originally of Asiatic origin; and it is the former who have pushed forward modern civilization, with all its errors of life.

Thus cancer is everywhere reported to be rare, and sometimes almost absent, in primitive, uncivilized peoples, but it has been repeatedly observed, in many localities, that as these same people mix with Europeans and adopt their diet and mode of life, cancer is sure to increase, until its frequency often about equals that in their highly civilized neighbors. I went over this matter pretty fully in my former lectures and cannot dwell on it now, or give examples. I can only emphasize the fact that this furnishes a strong support to the contention that cancer depends upon disor-

ders of metabolism, which are certainly increasing under the various elements which compose what is called advanced civilization.

Climate and Locality.—There is no evidence to prove that climate has any influence in the production of cancer, nor is it affected by locality; the disease occurs in hot, warm, temperate, and cold climates, and in every possible location on the earth. But it is undoubtedly most prevalent in temperate regions, for the reason that it is in these that modern civilization, with all its faults and foibles, is most highly developed.

The subject of the topical distribution of cancer, or its occurrence in certain regions, has been the subject of much controversy in England and France especially, and to read certain statements one would be inclined to believe that certain telluric conditions were of influence in its production, as along certain water courses, etc.

But a more careful analysis of all these statements shows that such elements can act only as contributing causes, as, for instance, through a rheumatic influence, which is known to be found in so many cancer patients.

The same may be said in regard to so-called "cancer houses," concerning which there are still occasional references. A careful investigation of these houses has commonly found them to be old, moldy, damp, badly ventilated, and otherwise unsanitary; also that such old houses are commonly tenanted by old people in succession, so that there are more at a cancer age to be affected. With our present knowledge of the causes which lead up to cancer we cannot but conclude, therefore, that the occurrence of the disease in groups, with some apparent connection, has been only the result of all living under the same conditions of ill health, including wrong diet, etc.; for we know that cancer

is not contagious or infectious, and there is no other reasonable explanation which can be sustained.

Food and Mode of Life.—In my former lectures I presented very fully the evidence that cancer was certainly a disease of civilization, its frequency and mortality advancing steadily in proportion as various tribes or peoples, previously exempt, have come more or less under its influence and adopted its manners and customs.

When we speak, therefore, of the influence of food in the production of cancer it must be understood that it is not claimed that the diseased process depends wholly and exclusively on the character of the food, including drink, taken. In my former lectures I tried to show that cancer was the result of a deranged nutrition, and we know that one of the greatest elements in inducing this latter is erroneous metabolism, depending again on the diet, to a very great extent. In a later lecture I shall hope to

develop this subject further, and indicate more completely than on the previous occasion, the elements of causation and the measures which can be successful in overcoming the disease.

In order to understand rightly the rôle which diet may have in the production of cancer I may have to briefly repeat, more or less, some of the matters brought forward in my lectures two years ago, and shall treat of the correction of diet in a later lecture.

We understand, of course, that the body is a vast laboratory, wherein, by exceedingly complicated processes, material from the outside world is appropriated to the needs of the economy, and after its use is cast out in very different and elementary forms. To effect the various changes necessary in this material we have a very considerable number of what are called organs of secretion and excretion, whose functions are combined and correlated in a marvel-

ous manner, which is even yet very imperfectly understood.

The actual biochemical processes by means of which the transformation of external food elements into living tissue and force, physical and mental, takes place are known as: 1. Anabolism, or the process of assimilation of nutritive matter and its conversion into living substance; and 2. Catabolism, or the breaking down of complex bodies of living matter into waste products of simpler chemical composition. These together constitute 3. Metabolism, or the sum of the chemical changes whereby the function of nutrition is effected. The actual procedure by which most of these activities is carried on is one of oxidation, by means of the oxygen supplied largely by the lungs, which constitutes about 65 per cent of the human body.

Now to make up for the daily waste of the other 15 elements, which form 35 per cent of the body tissues, and to support

the necessary activities of the system, mental and physical, it is necessary every day to take a more or less even supply of substances, which we call food and drink, which should contain about the proper proportion of the requisite bodily components. Under normal conditions of healthy living the appetite ordinarily serves as a proper guide for health in man and beast, serving to regulate the selection of material to preserve the balance of nutrition. But man especially has temptations to gratify the *taste,* which is quite a different thing from satisfying the *appetite,* and all are familiar with the many forms of disaster and disease which arise from gratifying the taste in food and drink; moreover, the temptations to this seem to increase continually with the so-called refinements of civilization.

The actual nutritive elements which are required are relatively few, and fall mainly under three classes: 1, Protein; 2, Carbo-

hydrates; and 3, Fats. Of these the latter two furnish most of the 18 per cent of carbon in the body, and the animal or vegetable protein furnishes the nitrogen, which forms only about 3 per cent of the body tissues: all these substances are, of course, used up constantly in providing heat and energy, physical and mental, day by day, the protein being concerned chiefly in replacing wasted tissue. The combustion of the carbohydrates and fat is relatively simple, and the waste products pass off harmlessly, mainly by the lungs, as carbonic acid and water.

But the course of the protein, or nitrogenous and sulphur and other mineral elements, is quite different. In the anabolism and catabolism of protein there are a vast number of intermediate changes, and various products are elaborated which we know to be of great significance in the system, and which when imperfectly completed are the source of much disorder and disease in

the economy. Of this the gouty state is a notable example, with a long list of secondary disorders.

But few realize, however, that cancer is another disease which is quite as striking in its relation to faulty nitrogenous and sulphur metabolism. In my former lectures I developed this subject pretty fully and need not repeat it here, but could adduce more recent proof, did time permit. Suffice to remind you that many independent observers have recorded very important and significant errors in the nitrogen and sulphur partition in cancer, both in its early and late stages, some of which I have verified in hundreds of volumetric urinary analyses. As these errors are made to disappear by proper dietary and medicinal treatment the carcinomatous lesions have steadily improved, and in many cases have disappeared entirely, as I hope to demonstrate in a later lecture.

We must, therefore, accept the fact that

cancer has very close relations to the elaboration of protein in the system, and the rational deduction of this is that an overconsumption of nitrogenous food has something, if not everything, to do with the production of cancer. As yet we know little or nothing in regard to actual cancergenesis; no one has ever demonstrated, and probably no one ever will demonstrate, the absolute beginning of the change in some normal cell or cells, in the breast or elsewhere, which eventuates in their taking on the rampant or malignant feature which we call cancer. But this change does occur, and though the exact alterations in the polarity of the cells and the disturbance of their centrosomes and nuclei, which have been described, may not be perfectly understood, there is some definite cause for their occurrence. Some have suggested the hypothesis that the mononuclear leukocyte, by conjugation with disturbed cells, gives them an abnormal reproductive power by

which they eventually develop the tumor and invade other tissues. But back of all this there is still some activating cause, which is found in the fluids which bathe every tissue, namely the blood and lymph, which we shall see later are deranged in cancer.

The fact that with innumerable injuries occurring everywhere and at all times cancer develops from them very rarely, should teach us something. We must conclude, therefore, that there is some constitutional condition, or rather some state of the blood, which nourishes the cells and which favors this continued malignancy—some fuel which feeds the malignant process and at the same time induces a progressive lowered vitality, ending fatally. For we have already seen in these and former lectures that the local lesion which we call cancer is but one manifestation or result of a pernicious anemia, which, if not checked, may end life in a relatively short time.

As cancer is not contagious or infectious, this anemia, with all its concomitants, including the local trouble which we call cancer, must be autotoxic, and evidence is strong that it is of a nitrogenous origin. We look naturally, therefore, to see if there can be found any relationship between an augmented consumption of protein-bearing food and the steady increase in cancer mortality which is reported on every side.

England has furnished more fully and for a longer period than any other country the mortality and dietary statistics of its population, and from these we can learn a great deal of value in our study.

According to a carefully prepared table by W. R. Williams showing the total population in England during the years from 1840 to 1905, cancer deaths had increased from 17.7 per 100,000 population in 1840 to 88.5 in 1905, or five times in numbers, and in 1913 there were 105.5 deaths from cancer in 100,000 population. During this

time the meat consumption had more than doubled, to 130 pounds per capita in 1904; so that, according to Williams, it is estimated that among the adult well-to-do population the per capita meat consumption was from 180 to 330 pounds per year, in addition to large quantities of game, poultry, eggs, fish, etc.

The United States Report of the Meat Situation, 1916, also furnishes some valuable information to aid in this inquiry.

The Argentine Republic stands next in the consumption of meat, with 140 pounds per capita, and with a cancer mortality of 91 per 100,000 in 1900.

The United States comes next, with a per capita consumption of meat at 201.1 pounds in 1909 and a death rate from cancer of 73.8 per 100,000 in that year, which, as previously stated, was 79.4 in 1914 and 81.1 in 1915.

New Zealand exceeds the United States a little, with a meat consumption in 1902

of 212.5 pounds per capita, and an increase in cancer mortality from 32 in 1877-1888 to 60 per 100,000 in 1900 and 71 in 1903. This increase is mainly among British and other immigrants, whereas the aborigines, living simple lives, are seldom affected.

Australia stands first in the consumption of meat, with the enormous rate of 262.6 pounds per capita in 1902, and the increase of deaths from cancer there is most striking. In 1851 the death rate per 100,000 living was 14, in 1900, 62.6, and in 1913, 75 per 100,000 living. The most striking difference is exhibited between those who are native born, who in 1900 had a cancer death rate of only 22 per 100,000, while the British born had a mortality from cancer of 203, or nine times as great; a still higher ratio was found among immigrants of other nationalities. Those who have written there on the subject ascribe this proclivity to cancer to the gluttonous habits of immigrants, who have meat for breakfast,

lunch, dinner, tea, and supper (MacDonald, Williams).

Italy, consuming the least quantity of meat, 46.5 pounds per capita, in 1901, has the lowest cancer death rate, but the present meat consumption cannot be learned. In Italy, however, the mortality from this disease is steadily rising, from 50.9 per 100,000 in 1860 to 1900 to 63.6 per 100,000 from 1906 to 1910.

But, as I have tried to show you all along, it is some derangement of metabolism which is at the bottom of neoplastic growths, and that derangement is not necessarily due to any one single cause, as diet. There are other elements of disturbance besides the nitrogenous malassimilation which is due to the intake of an excessive amount of the proteid of the animal kingdom; for cancer is said to have been seen in vegetarians, although I have never met with such a case. We know, however, that some or many articles from the vege-

table kingdom, such as the pulses and some nuts, contain a very large proportion of proteid; thus dried peas contain 21 per cent, haricot beans 23, lentils 23.2, dried lima beans 26.4, soy bean flour, 39.5, butternuts 27.9, black walnuts 27.6, peanuts 25.8, and almonds 24 per cent of proteid, all more than is contained in beef and mutton. Thus a large supply of any of these might produce the same error in the blood stream as that induced by meat.

In my former lectures I pointed out also that coffee and alcohol were found by statistics and clinical experience to have a prejudicial effect on cancer, and therefore must be considered as elements in its production. In a later lecture I shall deal more specifically with these matters, in reference to the prophylaxis and treatment of the disease.

At the present time I will only remind you of what I have so often said before: that it is the complex of modern civiliza-

tion, with all its temptations and errors in regard to eating and drinking, and living, including the nervous strain felt everywhere, that in some way produces alterations in nutrition which account for many of our diseases. This operates through the blood current, which ministers in such a way to the tissues that under some slight provocation a heterologous growth of certain tissue cells occurs, with malignant tendencies, instead of the normal homogeneous and stabile structures which compose healthy tissues; and this departure from normal cell action we call cancer.

LECTURE III

THE MORTALITY FROM CANCER; ANALYSIS OF SURGICAL STATISTICS

As has been already shown in these and previous lectures, the death rate from cancer has been steadily and alarmingly increasing in almost every locality, ever since statistics have been collected. The attempt has been made from time to time to show that this increase is not real, but is apparent, and that the error arises from three main causes. These are: 1. The increased longevity in general, leading to the existence of more people of the cancerous age; 2. Improved diagnosis; and 3. More careful death certification.

Time does not allow us to go into this matter very fully, but this erroneous impression is so widespread, and one so con-

stantly meets it in conversation, that it is desirable to present briefly the grounds and proof for an absolute denial of the assertion that there has been very little or no real increase in the mortality from cancer.

First, it may be stated that most of the arguments quoted against the correctness of statements regarding the steadily rising death rate of cancer date back to King and Newsholme, who, in 1893, some twenty-three years ago, attempted a study of early statistics and drew certain conclusions from them. This was long before the era of careful research and reliable diagnosis and statistics, and can have little, if any, weight. Bashford and Murray in the Second Scientific Report of the Imperial Cancer Research Fund, in 1905, attempted to show the same thing. But even this was eleven or twelve years ago, and the utter fallacy of the sophistical arguments appears in the absolute, steady increase in the death rate of cancer as shown by official

tables from many countries, and as especially collected and seen in the remarkable book by Hoffman on "The Mortality from Cancer Throughout the World."

It is impossible in a brief lecture to give even a faint idea of the immense and valuable amount of research represented, and consequently the most useful information furnished in this monumental work; the material is taken from original documents with new information, freshly obtained from original sources. All is given with an impartiality and clearness which are refreshing when compared with some recent writings on the subject. With the immense accumulated data on record, some of which will be referred to, all showing a steady rise of mortality up to the present time, and that during a period of especial study of cancer such as the world has never known before, it is quite unreasonable and impossible to believe that this advance is only apparent, and that it is influenced by

the three suppositions mentioned. While accuracy of diagnosis may be important in early cancer, it is certain that in late stages and at death, from which the various mortality tables are taken, there is rarely any question as to the diagnosis. There is evidence, however, to show that cancer is increasing even more rapidly than appears from mortality statistics.

In 1900 the recorded mortality from cancer in the registration area of the United States was 63 per 100,000 living, and in 1914 it had risen to 79.4, or an increase of 16.4 per 100,000 living, or over 26 per cent. While in 1915 there were 54,584 deaths from cancer against 52,420 in 1914 in the registration area of the United States, or 2,164 more deaths. The total number of deaths in the entire United States is estimated at about 80,000 last year. The death rate in 1915 was 81.1 per 100,000, or a rise of over 28.7 per cent since 1910. The increase during this past year has been

1.7 per 100,000 living, while the gross increase for the preceding five years was but 5.6 per 100,000, or less than an average of 1.2 per 100,000 each year. So that the great activity in cancer education and in operative surgery during that year has succeeded in raising the death rate from cancer by .5 per 100,000 over the average of the preceding five years!

It is to be noted that this increasing mortality from cancer has been steady and constant, though with slight diminution occasionally, some years ago, before the great activity in cancer research, cancer control, and cancer surgery. All this would certainly indicate some deep-seated cause of the malady which had not been recognized; indeed the mortality during the last five years was as follows: 1911, 74.3; 1912, 77; 1913, 78.9; 1914, 79.4; and in 1915, 81.1 per 100,000.

It may be of interest to know that the mortality from cancer varies very greatly

in different portions of the United States, and it would be instructive to investigate the cause; but the data for this do not exist. The highest death rate for 1914 was in Vermont, 109.9; Maine had 107.6; Massachusetts, 101.8; New Hampshire, 100.8; California, 97.9; all against the general average of 79.4 per 100,000 inhabitants in the registered area of the United States. The lowest among the registration States was Utah, with 45.8 per 100,000 living. In New York State the deaths from cancer in 1914 were 88 per 100,000 population in the cities and 96.1 in rural districts.

Many cities, of course, show a higher death rate from cancer than the average, owing in part to the number of patients coming for treatment, and also to the more complex life of the cities, with the greater temptations leading to the disturbances of metabolism causing cancer. Thus, the average of twenty large cities gives a rise in death rate of cancer from 48.6 from 1881

to 1885, to 89.3 per 100,000 living in 1913.

The following table gives the average cancer mortality from 1906 to 1910 per 100,000 in certain American cities:

San Francisco	102.5	Newark	76.9
Boston	99.4	Chicago	76.5
Providence	96.9	Greater New York	74.1
Los Angeles	94.9	Richmond	73.9
Cincinnati	93	Kansas City, Mo.	71.1
Hartford	91.9	St. Paul	71.1
New Haven	89.8	Indianapolis	70.4
Dayton	88.5	Borough of Brooklyn.	68.9
Rochester	88.2	Milwaukee	68.4
Springfield	86.9	Nashville	68
District of Columbia.	86	Pittsburg	66.4
Baltimore	85.8	Minneapolis	65.3
Omaha	85.7	Detroit	64.5
Buffalo	84	Cleveland	62.9
New Orleans	82.2	Louisville	61.1
Philadelphia	81.9	Jersey City	60.5
Hoboken	80.7	Charleston	53.6
Columbus	79.5	Seattle	50.2
Manhattan and Bronx	78.4	Augusta (Ga.)	49.1
St. Louis	78.4	Memphis	48.7
Denver	77.9	Savannah	47.1

In the city of New York, as given by the Board of Health Bulletin, there were from July 1, 1915, to June 30, 1916, 4,672 deaths from cancer, or an average of just

12.8 persons per day; in the last six months, July 1 to December 31, there were 2,264 deaths from cancer, 990 males and 1,274 females, with a daily average of a little higher than last year.

It is readily understood that many factors enter into the study and proper understanding of the statistics of cancer, such as age, sex, location of the lesion, etc., and the limits of a lecture do not permit any adequate presentation of the subject, but a few points may be mentioned.

Thus, in regard to age, the States which represented the greatest number of deaths from cancer, Vermont with 109.9 and Maine with 107.6, show that the proportion of individuals over 45 years of age was over 27 per cent, compared with 17.7 per cent for Kentucky and 16.2 per cent for Montana, which latter gave almost the lowest mortality from cancer.

The same is true somewhat in regard to sex, although sufficient data are not at hand

to show the relative number of living males and females in the different States. We know, of course, that the great preponderance of cancer in females is due to that affecting the breast and uterus, and where females preponderate in the population the total cancer mortality would be the highest.

The location of the lesion has also a bearing upon the understanding of statistics. Thus in Norway, for some unexplained reason, cancer of the stomach caused the great mortality of 60 per cent (66.9 males, 52.9 females) of all cancer mortality, while cancer of the breast caused but 7.6 and of the uterus 16.2 per cent of the whole, the general rate being 93.9 per 100,000 inhabitants. In the United States, in 1914, cancer of the stomach and liver caused the deaths of 37.9, cancer of the breast 10, and cancer of the female genital organs 14.2 per cent of all deaths from cancer.

There are other points also to be taken under consideration in connection with cancer statistics which we cannot even touch on and can only mention one, namely, the physical condition; for the disease is known to be more frequent proportionately among the better nourished and well-to-do classes, etc.

Turning to other countries, we find abundant confirmation of the persistent and considerable increase in the mortality from cancer, in many cases much greater than has occurred in the United States; and in nearly all of them the increase can be recognized as commensurate with the progress or advance of so-called civilization, especially as emphasized in city life.

England and Wales afford us about the most satisfactory statistics in this regard. W. R. Williams has given a valuable table, already referred to in connection with food, showing the prevalence of cancer and its relative increase in England and Wales

from 1840 to 1905. In 1840 the cancer death rate was 17.7 per 100,000 living, with a proportion of 1 to 129 of total deaths. The deaths from cancer increased with almost a perfect regularity until in 1905 there was a mortality of 88.5 per 100,000 living, and 1 in 17 of the total deaths was due to cancer, as against 1 to 129 in 1840. The total proportion of deaths from all causes is given for each year, and while the population has only a little more than doubled in these 65 years, the deaths from cancer have increased from 2,786 to 30,221, or over ten times the number; the rate of cancer deaths per 100,000 living had increased five times, while the ratio of deaths from cancer to total deaths had multiplied more than seven times. Since 1905 the cancer death rate in England and Wales has advanced to 99.3 per 100,000 in 1911, and to 105.5 in 1913, and in London the cancer mortality is 114.9 per 100,000 population.

Statistics from other countries, collected

by Hoffman, show the same steady increase. I will not weary you with much more of statistical detail, but it is interesting to record a few of the more striking facts, illustrating the universal increase in the cancer death rate during these later years of cancer research and active surgery. The data are from 1896 to 1910, and the countries will be arranged according to proportionate increase in the death rate per 100,000 population. Thus, Ireland comes first, with an increase of 20.7, which is explained in part by the emigration of younger persons, leaving more of the cancer age; next comes Denmark, increased from 118.9 to 137.3, or 18.4 per 100,000 population; then the German Empire with an increase of 13.4; Hungary, 12.9; Italy, 12.7; Holland, 11.6; Norway, 10.9; Austria, 9.4; and France from 97.3 to 102.7, or only 5.4 per 100,000 population. During this same period the deaths from cancer in the United States have increased about

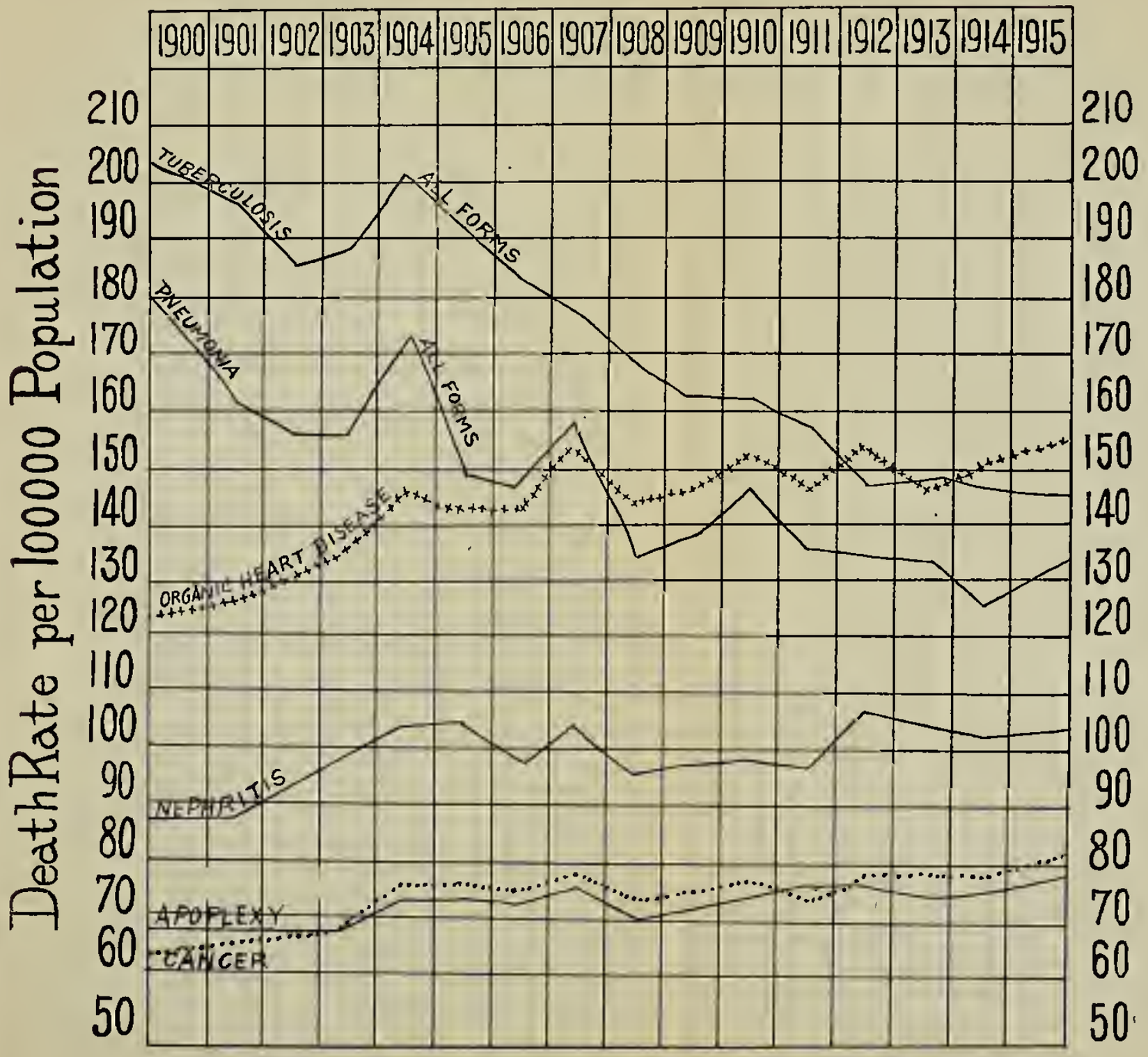
18 per 100,000, or almost as much as the highest of the countries mentioned.

In regard to the bearing of all these figures upon the alleged apparent and not real increase of cancer, I may quote from Hoffman: "The evidence is so convincing" as to the reality of the increase of cancer "that it may be safely maintained that no other statistical conclusion in medicine is so concisely and incontrovertibly established as this: in any event, no satisfactory evidence is available to successfully contradict this conclusion at the present time. If all this evidence, however, is inconclusive and worthless, then no alternative remains but to discredit the statistical returns of every country in the world with regard to any single disease or group of diseases, although the returns are accepted as approximately accurate in regard to every other important cause of death."

In order that the real increase in the

Death Rate per 100000 Population

From United States Mortality Statistics 1915



mortality from cancer may be readily understood, the accompanying chart (now hanging before you) has been copied from that given in the volume of the United States Mortality Statistics for 1914, and it will help to visualize what has just been stated. The data for 1915 have been added through the courtesy of Mr. Rogers, Director of the Census, in a personal communication.

The striking fact brought out in this chart is the comparison between the steadily diminishing death rate of tuberculosis, through careful medical supervision, and the steadily increasing death rate of cancer, under surgical care. While the mortality of tuberculosis has fallen from 201.9 persons in 1900 to 145.8 in 1915, or 56.1 less deaths in each 100,000 population, or over 27.7 per cent, the cancer death rate has risen in the same time from 63 to 81.1 per 100,000, or over 28.7 per cent. They have therefore approached each other by

56.4 per cent, and unless this rate of progression is changed in some way, the lines will have crossed one another in less than fifteen years more, even as that for organic heart disease has already crossed that of tuberculosis, it having risen almost 27 per cent.

Another interesting lesson to be drawn from this chart is that the death rate from organic heart disease, nephritis, and apoplexy have all risen coincidently with that of cancer, only that the rate of the latter has outstripped them all. If we accept the fact that the increasing death rate of these three diseases is largely the result of modern civilization, especially from erroneous eating and drinking, it would appear that cancer is due to the same cause.

Realizing, then, that the mortality of cancer is materially and steadily rising, in spite of most diligent research by innumerable honest and capable scientists, with the expenditure of vast sums of money and

countless animal lives, and in spite of the work of ardent, earnest, and capable surgeons, who have failed to stay the terrible progress of the disease, let us briefly study some of the reported statistics in regard to the results of operative interference in cancer.

It may be first stated that this is a most difficult task, so different are the reports from different surgeons. There are many elements which affect the statistics relating to the surgery of cancer. First of these is, perhaps, the stage of the disease at which the operation is performed. Second, the results vary, of course, immensely with the knowledge and skill of the operator and the excellence of the technique. Third, the class of cases operated on has much to do with favorable or unfavorable results reported. Fourth, the length of observation after operation is always to be considered in connection with surgical statistics. Finally, the optimism of the re-

porter must be regarded in weighing the true value of reports as to ultimate results. We will briefly consider these points.

First, as to the stage of the disease at which the operation was performed. We have seen in this and previous lectures that the lesion which we call cancer is but a *result* of a deranged blood state, and is not a purely local process, a something simply to be removed surgically in order to have the patient get well and remain well. For one sees plenty of cases where there were recurrences even after the very earliest operations possible. But the claims put forth that favorable results are conditioned on very early operations are so strenuous and persistent that we must believe that a measure of the favorable results can be thus accounted for. We know, of course, that very late in the disease operations are out of the question. It is a little curious, however, that most of the pictures shown, statistics presented, and arguments ad-

duced by these ardent advocates of early operation relate to cancer of the skin, especially about the face, which cause hardly 2 per cent of all the deaths from cancer in various countries; whereas those who see much of cutaneous epithelioma know that if properly handled it is generally a comparatively mild affair and relatively easily cured without surgical operation, as you have so constantly seen in this clinic in past years. But mortality statistics are greatly influenced by the class of cases which the operator takes, and so if epithelioma of the skin is included, the ratio of cures will be high. Selected cases also always give more favorable statistics.

Second, the knowledge and skill of the operator and the perfection of technique undoubtedly influence surgical statistics. The ordinary practitioner or surgeon cannot hope for as favorable results in many operations on cancer as can those who are past masters in this line, and these latter

are the ones who furnish the favorable statistics.

Third, the class of cases operated on affects surgical statistics very greatly. While epithelioma of the face, and even of the lip, when well removed, may yield most favorable statistics, cancer of the breast, uterus, stomach, intestines, gall bladder, etc., yield increasingly unfavorable statistics, as will be presently seen.

Fourth, the duration of observation after operation affects very seriously the validity of statistics. Not long ago three years' freedom from disease was considered the time to regard a cancer as permanently cured; but this time has been lengthened more and more, by the observation of any number of cases where the disease has recurred even long afterwards, and reliable observers are now very chary in expressing an opinion as to the final cure of a cancer. This will be more fully considered in another lecture.

Finally, the optimism of the reporter seems often to have something to do with the reliability of surgical statistics. This need hardly be discussed. The older and more experienced the surgeon the less confident he is of having actually cured cancer with the knife. At a discussion in the New York Academy of Medicine, some years ago, Dr. Robert F. Weir said that the late Dr. Agnew, a celebrated surgeon of Philadelphia, had remarked, just before his death, that he doubted if he had ever been justified in an operation upon cancer, and he, Dr. Weir, stated that he could almost say the same.

Turning now to the actual statistics of operative surgery on cancer, we will find that the percentage of reported cures varies very greatly, in accordance with the points just stated. It is understood, of course, that no accurate statements can be made from statistics in reference to the actual mortality of cancer in any location,

partly owing to the paucity of figures, and partly because the stages and extent of the disease differ so greatly, and the results vary with the previous duration of the lesion and the period of observation after the operation.

Cancer of the skin presents the best operative statistics of any region, and the claim is made that all cases are curable if operated on early enough and rightly. While this is not wholly true, it is certain that if all lesions which one chooses to call "precancerous" are thoroughly extirpated very early, and included in the statistics, the percentage of cures can be reported as very high. So that it may be said that, taking all statistics together, including very small as well as large lesions, the favorable results, that is permanent cures of lesions which can be truly called cutaneous epithelioma, may run as high as 75 per cent. But against this is to be set the fact that a very large share of these cases, taken early and

by competent persons, are equally amenable to cure by lighter measures, without the horrible disfigurement which one sometimes sees after purely surgical procedures.

Cancer of the lip, when taken early and treated radically, including gland extirpation, also yields a fairly satisfactory result, depending, of course, on the stage of the disease, or amount of involvement of tissue and glands, and the completeness of the operation. But while some operators have claimed 75 per cent of cures, Hertzler makes the percentage of permanent cures not much over 25 per cent. And here again, if taken very early and treated correctly, many of these cases yield without the knife, whereas very late cases may be practically inoperable.

When, however, we come to cancer within the mouth, the tongue, etc., it is quite a different story, and the end results of surgery are commonly unsatisfactory.

Certain European surgeons have reported an operative mortality in cancer of the tongue as high as 36 per cent, while recurrences are the rule, and really permanent cures the very great exception.

As before stated, it is extremely difficult to give any true and accurate estimate of the real end results from operative surgery as ordinarily performed in cancer affecting various regions. The obvious reason of this is that most of our statistics are from those who are especially occupied with the disease under most favorable hospital facilities, and also certain statistics may be from selected cases; moreover, operators are naturally inclined to report mainly satisfactory results, while the other aspect of the case is seldom presented. Aside, then, from superficial epitheliomata, about the only locations in which there is even a fair chance for the patient under the knife are the breast, uterus, and rectum, and for these large statistics are available; but

again these are unsatisfactory, as they vary so greatly.

The reported statistics of cancer of the breast are very provoking. Individual operators have claimed as high as 50 and even 70 per cent of cures (Rodman). Murphy, on the other hand, on a basis of end results states that the plump woman invariably succumbs, and that Paget's disease ends fatally in 90 per cent of cases. Hildebrand mentions 606 operations in which the percentage of permanent cures varied from 15 to 23 per cent; late recurrence is not uncommon in cancer of the breast. He thinks that 35 per cent is the maximum possibility for permanent cures. He would be very suspicious of any higher figure. Judd reports that of 266 cases of carcinoma of the breast in the Mayo Clinic, which could be traced, 39.8 per cent were reported as alive at the end of five years, although there was recurrence in 6 cases.

Lubhardy, in an article on recurrence,

in 1902, states that 1,321 recurrences were known to have occurred after 2,107 operations, or nearly 63 per cent, 4 per cent of which were late recurrences; he does not mention the number "cured" nor the number of patients untraced. Unfavorable results in breast cancer are seldom published. Dr. H. C. Coe in a discussion quotes the experience of a friend who had operated on between 200 and 300 cases of cancer of the breast with exactly 13 recoveries.

Levin (*Med. Record,* Jan. 27, 1917, p. 175) has recently made some startling statements in regard to the recurrence of carcinoma after breast operations. While granting that early cases without lymphatic involvement yielded good results, he states that these represented at the utmost only 25 per cent of the cases operated on: 75 per cent were advanced cases with involvement of the skin and lymph glands. Of these barely 25 per cent could be cured by radical operation, and

in 52 per cent of the advanced cases operated on metastases appeared in distant organs without local recurrences. The longer the period after the operation the greater was the number of recurrences.

He quoted Heurtaux, a French surgeon, who had followed up 284 cases which he himself had operated on during the previous 20 years. H. stated that four years after operation 43 per cent remained free of the disease, eight years after only 16 per cent, and 20 years after only 2.5 remained free from the disease. There were a great many cases of carcinoma of the breast reported in which the patient died from metastasis in different organs without local recurrence 10, 15, and 20 years after the operation. The late metastases most frequently took place in the skeleton, which was due to the fact that skeletal lesions might continue a long time without causing clinical symptoms.

Dr. Levin confirmed the skeletal involve-

ment by roentgenograms of ten cases of carcinoma of the breast observed during the last two years, in which it was found that the metastases must have been present at the time of operation.

Dr. Willy Meyer in the discussion said that physicians had long been too prone to consider carcinoma a local disease, and when he found signs of metastatic infection he never felt that he could expect anything from an operation.

We can only state with Hartwell and others that every especially favorable series of cancer cases, and this applies particularly to the breast, should be subject to close scrutiny. Why did this or that operator get marvelous results and an equally efficient man get very poor ones?

There are also many factors to be considered. How many cases were of the senile or scirrhous type? How many of the tumors removed were proved microscopically to be cancer? If one operates radically on

every tumor or swelling in the breast, however small, the end results will, of course, be more favorable; for undoubtedly many innocent lesions, chronic mastitis, adenoma, cystic tumors, etc., are often removed unnecessarily. The question also arises as to what was the after care, and what steps were taken to prevent recurrence? In view of the statement of Hildebrand, just quoted, that 35 per cent is the maximum possibility for permanent cure, and considering the terrible pain and miserable death one so constantly sees in recurrences, it really becomes a question as to the advisability of surgical interference.

The opinion has been expressed more than once by those who have watched the disease, that if left alone, with ordinary medical care, the entire average of 100 cases would be better, as to length of life and suffering, than if submitted to operation. I shall hope to show you in a later lecture that a greater proportion of breast

tumors, diagnosed as cancer by competent surgeons, have recovered completely for years, under proper dietary and medical care than the percentage yielded by operative procedure.

There is a wealth of statistics regarding operations for cancer of the cervix uteri. Despite the figures obtained by radical operators like Wertheim, the vast majority of those surgeons who practise either vaginal or abdominal hysterectomy have obtained far inferior results to those of Byrne, with his cautery, which is still in use. Wertheim once reported the astonishing figure of 61 per cent of 5-year recoveries. In a later report, however, Wertheim stated that only about one half of the cases that come to him are operable, and of these about one half are cured by operation, that is, about 25 per cent of all cases. But experience shows that if these cases could be followed up there would be very many late recurrences. The claims of

Wertheim and others must be offset, however, by the high operative mortality reported by many; as the cases must have been incipient in order to be operable, it is possible that Byrne with his cautery could have done nearly as well, and Byrne never lost a patient. But Klein of Munich, by circular letters compiled many statistics, and concluded that the percentage of cure was but 4.5 per cent, and Klein himself obtained only 3.6 per cent. Reinecke asserted that only 10 per cent of cases of cancer of the cervix can be cured.

Fredrick (*Trans. Gynæcol. Soc.*, 1905, p. 136) collected the records of 500 hysterectomies for cancer of the cervix performed by prominent colleagues and himself. Of this entire material there had been but 13 five-year cures. In discussion Henrotin stated that he had practically given up abdominal hysterectomy. Currier stated that surgery was a failure as a cure for cancer.

At an earlier session of the Society, 1900,

in a discussion of Pryor's paper, Van de Warker asserted that surgery had done nothing for cancer; Lapthorne Smith said that many women did better if left alone. J. Byrne stated that hysterectomy for cancer was a crime. Engleman thought that cancers left alone may insure a longer survival than those treated surgically.

In a discussion before the same Society in 1896 (on Byrne's paper) vaginal hysterectomy was discussed. While Boldt, Dudley, and Baldy claimed excellent results, Segond is known to have had but 5 relative cures (2-5 years) in 80 cases. Mundé saw a rapid return in all his 25 cases. Polk had recurrence in every one of 50 cases. Byrne collected notes of 283 operations by ten men, and the results were as follows: died, 7 per cent; life prolonged, 11 per cent; and became worse, 82 per cent.

In the Transactions for 1912 (Discussion of Neal's paper, Wertheim's operation) Bovee stated that only 10 per cent of can-

cers of the cervix were operable. Polak had no survivors from operations, although four were living from Byrne's cautery method. Chalfant had 3 cures (6 years) in 30 cases. In general the saving of life was offset by the high operative mortality. Later I shall report two remarkable cases of very extensive cancer of the cervix which have entirely recovered, with normal cervix, without operation.

In regard to operative results in cancer of the stomach there are relatively few satisfactory statistics. W. J. Mayo reported recently (Levin, Hoffman "Statistics of Mortality," etc., 1915, p. 210) on 996 cases of carcinoma of the stomach. Of these 344 cases only were operable and of the latter 25 per cent remained cured five years and over, after operation. In other words, about 9 per cent of cases of carcinoma of the stomach can be cured by surgery at the hands of Mayo, how much less in the hands of most other surgeons?

Against such success must be opposed the analysis of 1,000 cases of cancer of the stomach by Friedenwald (*Amer. Jour. Med. Sci.*, November, 1914). He states "of the entire number, operations were performed in 266 instances; of these there is not one patient living." But few lived more than a year after operation; the majority died within the first six months.

In cancer of the gall bladder several good operators have reported that there have been absolutely no good results.

In cancer of the rectum there is a high operative mortality and very questionable ultimate curative results; indeed, there are very few reliable statistics in regard to this. In 27 perineal and sacral operations Mayo reports 7 per cent primary mortality, and in 44 abdominal and combined abdominal and perineal operations 20 per cent operative mortality. Tuttle reports a higher operative mortality. While there are no available data in regard to the dura-

tion of life after operation, it is well known that the disease usually recurs, and in many a colostomy is performed, with all its distressing features and very intangible results.

Time does not admit, nor is it necessary for me to go further into the brave but futile attempts which have been made by surgeons to cure such cases of cancer as can be reached by the knife, which, as we have seen by the testimony of many foremost in their ranks, has been found ineffective to a very great degree. In addition to the locations just mentioned there are many others where the attempt has been made to eradicate the disease surgically, but either with results quite as unsatisfactory as those mentioned, or much worse. Thus cancer of the tongue, palate, esophagus, cardiac orifice of stomach, liver, gall bladder, pancreas, small intestine, bladder prostate, etc., also of the brain and spina cord, are most unfavorable, and both th

operative mortality and end results are disheartening. All surgeons agree that at least 50 per cent of all cancers are inoperable, so that in all the reports concerning the results of operations this must be taken into consideration, and the real percentage of cures of cancer by surgery must be divided into at least one half. Thus, if operative surgery yields an average of 25 per cent of apparent cures in all cases operated on, this would mean only 12.5 per cent of all cases of cancer. This, considering the late recurrences often not traced, bears out the commonly received opinion that about 90 per cent of all patients once attacked by cancer die of the disease.

Surely the outlook for surgery, borne out by the steadily rising general mortality from cancer, is most unpromising, and one naturally turns to medicine, to know if there is not some means of modifying the system so that there shall not be this tendency to malignant tissue change, so de-

structive to life. In my former lectures I attempted to show that all experience and biochemical laboratory studies looked this way, and in a later lecture I shall hope to show that by dietary, hygienic, and medicinal measures the disease can be and has been checked repeatedly, and cancer cured without surgical operation. The permanence of the cure depends, of course, upon the continued faithful adherence of the patient to the means and measures which caused the dissipation of the tumor. For no one can doubt but that, if the real cause is met and kept in check by prolonged proper measures, the disease will not and cannot redevelop.

Do not misunderstand me and think that I claim that each and every case of cancer, in any stage, can be cured. Alas, my sad experience with the many deaths from recurrent and inoperable cancer, especially in the New York Skin and Cancer Hospital, has taught me the contrary, and I have of-

ten been appalled at the impotence of human endeavor; although even these patients have often been grateful for the amount of benefit and relief afforded by proper measures, and in my former lectures I reported to you several such cases. But I do assert that the total percentage of cures in reasonable cases is far, far greater under the line of treatment I am presenting to you than under that most commonly employed.

LECTURE IV

INOPERABLE AND RECURRENT CANCER; METASTASIS; THE BLOOD IN CANCER

We saw in our last lecture that surgery had failed to check the rising mortality of cancer, and that during the year 1915, in the United States Registration Area, the death rate had augmented from 79.4 to 81.1, or an increase of 1.7 persons in every 100,000 living; this was a greater increase than the average rise in the death rate for the preceding five years which was only 1.2 points. This, moreover, occurred during a still active period of laboratory research, with wide publicity as to cancer control, by education as to the benefit of early operation, and with active and skilful surgery.

We saw that fully 50 per cent of all cases of cancer were quite inoperable when

first seen by competent surgeons, while the average end result, or cure, in the cases operated on, for all kinds together, good and bad, slight and severe, did not total as much as 25 per cent; this makes but 12.5 of the entire number who applied for surgical relief. We quite naturally asked, therefore, if some form of medical treatment, including diet and hygiene, could not afford a better prospect of arresting this fearful mortality. It is especially in regard to the large number of inoperable and recurrent cases, comprising over 60 per cent of the whole, that this inquiry is particularly important. We will briefly consider these latter sad conditions.

Looked at from its broadest aspect, in connection with what I have tried to show here and on former occasions, all cancer will be inoperable, or rather, not needing operations, when the principles I have tried to develop are fully elaborated by the wide experience of others, and when they

are firmly established, and correctly carried out. For when it is universally realized that it is the errors of life, determined and accentuated by advanced civilization, so-called, which lead up to and cause cancer, and when public education has been advanced along correct lines, the tendency to cancer will diminish and there will be fewer cases, either operable or inoperable. The former will melt away under correct internal and external measures, and the latter will be helped by, or slowly yield to the same, unless the malignant process has already progressed beyond the possibility of retrogressive metabolism. But, of course, it is too much to expect that such longed-for results will be fully attained within a generation or two.

Inoperable cancer is truly a most distressing condition, especially after it has become so after one or more surgical operations. The hopelessness and despair of the patient when told that no operation is

possible is bad enough. But when with recurrence, time and again after repeated operations, it is decided that no further relief by the knife is possible, the despondency is indeed pitiful—especially as ordinarily one can only look forward to a sure and most painful death, at a not very distant day. It is very difficult to convince many of these patients that medical treatment, including diet, can do any good, so firmly fixed is the idea that an operation is the only possible remedy; many, therefore, get weary of the restraint necessary when immediate results are not seen. And yet in my previous lectures I gave several such cases to show that much can be done medically along these lines, even in these distressing cases, and later shall hope to narrate other instances, similar to those reported in my lectures two years ago.

It is undoubtedly true that some of these cases which are inoperable when first seen could have been operated on at a much

earlier period, with as much success as follows in those in which this is tried. But we have already seen in the last lecture how small a proportion of these selected cases survive a long time; for we have yet to find statistics regarding those who have been traced even as long as ten years. In my previous lectures I reported concerning two patients with undoubted cancer of the breast who had been watched for sixteen years, with no trace of the trouble remaining, and two others who had been seen each for nine years; these latter have been watched since, and have been seen recently, eleven years after beginning treatment, with the same results, all without operation. These cases had all been diagnosed as undoubted cancer by competent surgeons, some eminent, and had refused operation, which had been urged. Later I shall hope to relate other similar instances of early cancer.

Inoperable cancer, comprising at least

50 per cent of all cases applying to the surgeon, presents many features of interest and worthy of consideration. The reasons for inoperability may be grouped as follows:

1. Those occurring in regions quite inaccessible, as in the brain, esophagus, liver, pancreas, etc.

2. Those otherwise accessible, but which have advanced too far before seeking surgical relief, occurring in many locations.

3. Those in accessible regions where experience has shown that recurrence is pretty sure to take place, such as advanced cases in the oral cavity, bladder, prostate, etc.

4. Those which have recurred after repeated operations, with extensive spreading of the disease, as in many cases of the breast, uterus, etc.

5. Those with already very great metastatic involvement, in many regions, presenting a true carcinosis.

6. Those in close proximity to or involving vital organs, blood vessels, ureters, etc.

7. Those in which there are other reasons, such as advanced age, lowered vitality, great cachexia, etc.

8. Those who absolutely refuse to be treated with the knife.

There is no necessity of troubling you with details as to the character or appearance of inoperable cancer, which are dwelt on in standard works, as our study relates rather to the causes of the disease and the means of arresting its progress.

Nor need I dwell much further on this distressing aspect of cancer, for I believe that all see the necessity of seeking some other measures than operative surgery to aid in solving the question of relieving the present condition of affairs. It is for this mass of otherwise hopeless cases that any reasonable method of treatment is worthy of serious consideration, both for the measure of relief which may be secured

along many lines by exactly the proper care, and especially for the possibilities of its value in regard to prophylaxis.

Unfortunately it must be acknowledged that many claims, quack and other, have been put forth in times past for remedies and measures which would control or remove, and even cure, the disease in all stages. But the failure of each in turn has very naturally discouraged many from accepting any new proposition, and the profession and laity have almost given up the hope for a real cure of cancer.

In the present instance, however, there is no attempt to present or urge any single means or measure as a cure-all for cancer. But there has been an endeavor to study the fundamental causes of the disease along biochemical lines, and to meet intelligently the errors found. We have seen cancer developing more and more as the ill effects of modern civilization have manifested themselves, and have found

that its increase has kept pace coincidently with and even exceeded that shown by certain other diseases, cardiac, arterial, and renal, which are recognized as due to errors of living; and there is every reason to believe that cancer is of the same origin. In a later lecture I shall hope to show how some of these errors may be overcome, with the consequent cessation of the cancerous process and even the disappearance of the malignant lesion already formed.

Recurrent cancer represents only the continuance and further operation of the internal or systemic causes which induced the formation and development of the first lesion, and are a natural sequence therefrom. Otherwise why should there be such an almost universal tendency of the disease to redevelop either in the same or other localities? It is granted, of course, that the very complete ablation of an early tumor and its surroundings removes a focus in which disease has started, and from

which is generated a hormone or poison which tends to further lower the vitality of the blood. But this does not by any means reach the basic cause, as we saw in the former lectures.

In estimating, however, the real value of an operative procedure, which has seemed to be successful for some period of time, we must also inquire if there has not been some other cause which may account for the absence of further cancerous deposits? It is more than likely, in successful cases, that the previous occurrence of the disease and the fear of recurrence have so modified the life of the patient in many respects, that the primal cause is more or less removed. It is incredible to believe that the mere removal of the portion of tissue in which the systemic disorder has localized can forever prevent a new focus from developing. As well might we expect that the removal of a gouty toe, a tubercular deposit, or a late syphilitic gumma

would inhibit further manifestations of the disease.

Recurrent cancer, then, is but the result of a continuance of the operation of the same causes which produced the first local lesion, and need surprise no one, if those causes are left entirely unchecked and the system unchanged. Undoubtedly in many instances the recurrence, or increased production of the disease, is made more certain by the operation itself; it is also recognized that handling or manipulation then or at any time may also contribute to this, as may be understood from the following:

1. Cancer cells, which have a reproductive capacity, may be forced into the adjoining tissue, or find entrance into blood vessels or lymphatics severed during operation, and there continue their activity and produce new lesions.

2. By implantation, cancer cells, already started on their reproductive career, may be transferred to freshly cut surfaces, and

there may develop new lesions, favored by the continued derangement of the blood current.

3. Cancer cells may have existed outside of the immediate area which was removed surgically, and so may continue to develop new lesions, being further stimulated thereto by the manipulations attending the operation.

4. We know, finally, that the occasional removal of lesions which are afterwards shown microscopically to be benign, such as adenoma, cysts, chronic mastitis, etc., will sometimes be followed by the development of true cancer, which will then pursue a malignant course.

On the occurrence, therefore, of any lump or lesion which might possibly be or become cancer, the greatest caution should be exercised to avoid all manipulation, lest a spread of the disease should render it more rebellious to treatment. For in the medical management of cancer it is natu-

rally more difficult to cure a patient when there are large numbers of diseased cells, in one or various locations, which are already giving forth their poisonous hormone, vitiating the blood stream.

The New York Board of Health has recently inaugurated a service for the examination of specimens excised from suspected cancer, in order to establish the diagnosis microscopically before surgical operation. There could hardly be devised a more effective plan to increase the mortality from cancer and to render many more cases really inoperable than this one would surely be; for by thus cutting into cancerous tissue and opening lymphatic channels and blood vessels, with the opportunity for absorption of cancerous elements during the necessary delay, metastases would certainly be induced which would render a surgical removal or a dietary and medicinal treatment immeasurably less effective. It is to be hoped that

this scheme will be immediately abandoned.

Recurrence of cancer is far more common during the first year after operation than in any other single year, but, as we shall see shortly, there is no time limit when the disease may not manifest itself anew. It is understood, of course, that recurrence depends also largely on the previous duration, extent, and malignancy of the tumor, and exact statistics are very few and imperfect in regard to these matters.

It is well known that not long ago three years was considered as the time at which, if there had been no recurrence, the cancer could be considered as cured, and very many statistics have been based on this period. But with further experience and closer observation, and with more diligent following up cases, it was found that recurrences did take place more or less frequently at subsequent periods, and now the time limit has been arbitrarily extended to

five years. This is because the very large proportion of recurrences are in the first year, varying for different locations and conditions from as high as 50 to 80 per cent in different statistics.

But as the patients who have lived out the five-year limit are followed up more carefully, it is found that recurrences do happen all along the following years, so that they are recorded as occurring 6, 8, 9, 20, and 25 years after operation; I have met with many after 3 or 5 years, and even as late as 15 years after operation. The vast majority of cases, however, are not thus accurately followed out, much less reported, and thus far we have few data on which to make accurate statements as to the actual permanent cure of cancer by the knife.

Recurrent cancer, as one constantly observes it, is most deplorable, and many who have had much to do with these cases realize that the distress is often far greater

than in other cases in which the disease has run a natural course, without operation and under good medical guidance. The pain attending growths in scar tissue is generally intense and commonly requires anodynes continually and increasingly; these in turn, by disturbing digestion and locking up the secretions, seem to augment the disease. Even with these patients, however, very much may be done to relieve their suffering by proper dietary and medicinal means, with suitable local medication, as I have constantly seen, so that opiates need be but little used.

Metastases form a very considerable and important element in inoperable and recurrent cancer, and we will briefly consider these. They occur mainly through three channels: 1. The lymphatic system; 2. The venous system; and 3. The arterial system. The permeation theory of Handley relates to direct extension laterally through lymphatic spaces, and belongs to the first

mentioned means of extension. It is also believed that metastases may be formed in the peritoneal cavity, and likewise in the pleural cavity, by direct contact of cancer cells or pieces of malignant tissue which have gained access to those cavities and have been carried down by gravity and movement of viscera. They then become engrafted on healthy tissue and form metastases there.

While holding firmly to the belief that the original cancerous growth and other foci of disease are developed from a vicious state of the blood current, there seems to be no reason for doubting that the disease may also be extended in the manner above indicated. Although cancer material cannot be inoculated from one person to another, or from a human being to animals, nor from one species of animal to another, experience and observation show that the malignant process can be transferred from one organ or structure of the

same individual to another part or structure, whether there has been a surgical operation or not.

The lymphatic system is apparently the first means for the spread of the malignant process, and all are familiar with the lymph nodes seen in the neighborhood of cancerous masses. It is supposed that these are caused by the lodgment of detached cells which have taken on the abnormal reproductive action which characterizes cancer. As with other foreign bodies, pus cocci, etc., the minute lymphatic glands seek to arrest their passage into the circulation, and it is probable that some of them are destroyed there, for the single enlarged gland will often remain for a long time as the only manifestation of metastasis. In many cases, where the original cancer has disappeared under dietary and medicinal treatment, the enlarged glands also disappear, as I have seen many times.

When the disease is unchecked, however, the glands fail in their endeavor to protect the system and continue to enlarge one after another along the line of the lymphatics, and the lymph stream then carries certain cancer elements through the thoracic duct into the venous circulation; thence they reach distant parts of the body, through the arterial system, and, being lodged in capillaries, a more or less general carcinosis results. Cancer elements can also proliferate along lymphatic tracts, and, furthermore, they may enter the venous and arterial systems directly by the invasion of a malignant growth.

All these and other points regarding the metastasis of cancer form a very interesting study, but time does not permit of further elaboration. All know that while primary carcinoma of the liver is very rare, its secondary or metastatic involvement is very common. The bones, lungs, spleen, kidney, and viscera generally are

all often found to be the seat of metastases, and in general carcinosis, which has lasted some time, metastases will be found abundantly both in the lymphatics of many parts of the body and in many organs and tissues. Metastases in the lungs are not uncommon in breast cancer, as also metastasis in the bones of the thorax. In the last lecture reference was made to the frequency of metastases in the skeletal structures of the body, which probably have much to do with the pernicious anemia which carries off the patient.

An interesting study relates to the extension of the carcinomatous process in the skin; this occurs at first near, and then around, and even at a distance from the site of an operation, especially after removal of the breast. These nodules are at first small, and felt deep in or below the skin, and are not colored. They steadily increase in size, and when about that of a small pea, they become red and elevated a

line or so. Later they may appear more numerous and even involve a large area, forming the so-called *cancer en cuirasse,* and may ulcerate. Sometimes single lesions of some size may appear here and there, even some distance from the site of the original tumor, and may not be colored. While these may represent lymphatic infarctions, it is often impossible to trace any direct connection with lymph ducts, and they more probably arise from capillary deposits of cancerous elements. I have frequently had these scattered cutaneous lesions excised, in cases under medical treatment, with a view of removing mechanically some of the foci from which the disease could be spread. The wounds have invariably healed promptly and perfectly, and no carcinomatous process has resulted.

The BLOOD IN CANCER has been studied mainly in reference to its solid constituents, and very little in regard to its plas-

ma; whereas it is from the plasma that the blood corpuscles are formed, and this is the principal agent in the development and nutrition of tissues, normal and malignant. For it is to be remembered that the chyle is discharged directly into the venous blood current, and the venous radicles absorb much of the nutritive material directly from the abdominal organs. The plasma, therefore, carries with it constantly a varying quantity of partially assimilated material to be oxidized in the lungs, and slowly purified by the agency of the kidneys; the serum albumen and serum globulin are also active agents in the formation of tissue, malignant or other. There is great need of laboratory studies along these lines, and also on the alkalescence of the blood, which we found to have a marked diminution in cancer.

We know also comparatively little in regard to the origin and destruction of the cellular elements of the blood, and can only

depend on the microscopic examination of their forms and appearances in health and in many conditions of disease. These have been abundantly studied morphologically, but mainly in the more severe forms and later stages of cancer, as detailed somewhat in my former lectures. Enough was there quoted to show the continued degeneracy of the blood after a cancerous growth had acquired some progress; there has also been observed some improvement for a while after the removal of a tumor, evidencing the deleterious effect of the hormone secreted by a cancerous mass.

The laboratory study of the blood from 22 of the cancer patients in the New York Skin and Cancer Hospital under my care, has been instructive as well as valuable along certain lines. In most of them it was made weekly, and often over long periods of time, and the results tabulated for easy comparison, in order to study closely the condition of the patient and the effect

of remedies. No very startling revelations were made by these blood studies, they confirmed in the main the observations of others, though some interesting facts were learned from an analysis of the data. They referred to ten cases of cancer of the breast, four of the stomach, two of the uterus, one of the rectum, one of general abdominal carcinosis, and the rest in scattered locations.

The lowest hemoglobin index was 35, with 2,800,000 red blood cells, in a woman aged 59 with cancer of the stomach. The next lowest hemoglobin index was 45, with which the patient, aged 53, died, with inoperable cancer of the right breast; the blood count showed 3,700,000 erythrocytes, and 10,400 white blood cells, 76 per cent of which were polynuclear. During the course of observation, covering several months, the red blood cells were once 2,100,000, but under careful treatment rose to 4,110,000 not long before death. The

next lowest red cell count observed was 2,200,000, with 12,000 white blood cells, and 65 hemoglobin index, in a man aged 52, with a terrible inoperative cancer of the cheek and neck, of which he died.

The highest red cell count made was 5,400,000, in a case of cancer of the uterus, in a patient aged 52, the count being 4,064,000 on entering the hospital. The highest hemoglobin index was 90 in a number of severe cases, and 100 in one case of sarcoma, to be detailed in the next lecture. In one recurrent case of cancer of the left breast, which was very distressing at first, the patient died peaceably and without pain, with a hemoglobin index of 90, and 4,900,000 red cells, and 7,400 white cells, of which 75 per cent were polynuclears, 17 per cent small lymphocytes, and 7 per cent mononuclears. Her hemoglobin had been 70 per cent on entering the hospital with 3,360,000 red cells. The highest leukocyte count observed was 18,-

600 in a case of inoperable cancer of the right breast, not long before death, in an unmarried female of 53; but in the course of treatment it had fallen to 6,200, about normal, from 10,520 before beginning treatment.

I will not weary you with more of these figures, which are interesting and instructive as one studies them week by week in connection with the physical condition of the patient. However much can be done for these distressing and inoperable cases of cancer, one has to acknowledge that when general carcinosis has set in we are still helpless in arresting the lethal progress of the disease, although very much can be done in prolonging life and alleviating suffering; and this does not mean with morphia or codeia which in the end does harm, and was very seldom administered to the patients referred to.

Forbes Ross, after ten years of constant microscopic clinical and surgical research,

has made some interesting observations, covering many pages, on the blood of cancer patients, which have a close bearing on our subject, and to which I can only briefly allude, and I do not know if I can make it clear in the time I can give to the subject. By long study of sections of carcinomatous tissue he claims that the mononuclear leukocyte behaves in a very different manner from the polynuclear. Briefly he charges the mononuclear white corpuscles with actually producing the disease, by conjugating with certain epithelial cells, thereby giving them the reproductive capacity which enables them to push forward on their destructive career. The polynuclears seem to come up to the defense of the body, but are overcome by the poison secreted by the rapidly growing tumor cells.

The red blood cells he also finds, with other observers, nucleated more frequently in cancer than in any other form of secondary anemia, and subject to a change of

composition, and deficient in lecithin and nuclein. He shows the importance of potash, which we shall later find clinically of such great value in cancer, and I cannot do better than quote some of his words: "How vitally important potassium salts are to the red corpuscles is shown by the following: One thousand parts of red corpuscles are found to contain six hundred and eighty-eight parts of water, three hundred and eight parts of organic solids, and eight parts of mineral. Of these eight parts three and one-half are of potassium chlorid, two and one-half are potassium phosphate, and decimal one potassium sulphate; the remaining 1.9 parts are divided between the iron, sodium, calcium, and magnesium, comprising the rest of the corpuscles. More than three quarters of the total mineral ash of the red corpuscles is, therefore, composed of potassium. This fact is an important one, and the reader is earnestly requested to bear it in mind."

Later we will again see some of the valuable clinical suggestions which arise from his researches.

From our study of inoperable and recurrent cancer, and of metastasis and the blood conditions in the disease, we see what a formidable task is before one who would attempt to lessen its morbidity and mortality. We see also how blind all have been who have so long looked to surgery to stay its progress. In my former lectures I collected and quoted statements from many surgeons of prominence in times past, and even some in quite recent times, all expressive of a belief in a constitutional origin of cancer, and many of them looking to a dietary cause. I also gave biochemical laboratory and experimental evidence showing the medical aspects of cancer. I then remarked that it seemed strange that the medical profession and the public had been so slow in accepting and acting on the accumulated evidence which I have

tried to put before you in these and the former lectures.

The reason for this seems to be that the medical profession, being occupied largely with acute disease and apparently definite and speedy results, became readily discouraged with the unsatisfactory course commonly observed in cancer; as in the case of tuberculosis, until the revival of an interest in the latter in recent years, with the well known beneficial consequences. They, therefore, turned the cancer cases over to the surgeons, in the hope that they could do better.

By the brilliant advances in modern surgery along many lines, the laity also have become obsessed with the idea that it has limitless power in many directions, and have yielded to the knife in spite of the rising mortality of late years. The glamour of modern surgery and its often spectacular results have quite blinded the eyes of many to real facts.

It is not a little interesting to note that the period to which we have referred, 1910 to 1915, in which the mortality of tuberculosis has fallen so steadily while that of cancer has so steadily risen, even in greater proportion, is that in which active laboratory work has also dazzled the public and professional mind. The enormous activity with the microscope in regard to the minute structure of the diseased tissues, and the elaborate and extensive work done in animal experimentation, have turned the thoughts of many from the homely and practical studies of the human frame in its various departures from health; thus too little attention has been given to the deranged activities of its various organs, and the perverted metabolism which has resulted from the stress and strain, with the temptations and errors accompanying the present intensity of human civilization.

Matters being as they are it is hardly to be expected that the surgeons would in-

cline to any other treatment than by the knife, especially since good pathologists have asserted that cancer is only a local affair and have urged its early removal. Nor would one expect that the surgeon would think along medical lines and investigate metabolic conditions, when the immediate results of operation seemed often to be so satisfactory. Neither would one expect the surgeon to seek from statistics the unfavorable aspects of this line of treatment, but rather those from which he could draw encouragement in trying to overcome so dire a disease.

But slowly light is beginning to shine, and you have seen and heard enough to realize that the simple removal of the *product* of the cancerous process, and surrounding tissues, can never check greatly the morbidity and mortality of cancer. You know now what the real cancer problem is. It surely is not the sole continuance of a line of treatment under which the death

rate has steadily risen from 63 to 81.1 persons in each 100,000 living, or 28.7 per cent since 1900, with a mortality of about 90 per cent of those once affected with the disease.

The cancer problem is by no means yet solved, but I think that you will all agree with me that we are on the right track, and I cannot do better than to close with a remark I made to you two years ago: "Scientific research must still go on in the laboratory; but clinical research and study, with laboratory work, on the human subject, which have not been hitherto sufficiently cultivated, should be pushed, so that by a mass of carefully recorded observations the truth or falsity of what has been here quoted and said may be refuted or confirmed."

LECTURE V

DIETETIC AND MEDICAL TREATMENT OF CANCER PROPHYLAXIS

Although all statistics show a steady and alarming increase in the death rate from cancer when regarded and treated as a surgical disease, it is probable that this course will be persisted in until sufficient evidence is accumulated to satisfy the medical profession and the laity that relief can be obtained by other means. For, as the drowning person catches at a straw, so the cancer patient hopes against hope that an operation will be permanently successful in this particular case, though the odds are so immeasurably against it. You have already seen some patients who have illustrated the possibility of controlling cancer by dietary and medical measures, and in

the next lecture I shall hope to show and report other cases and present statistics which will further illustrate this possibility. We will now consider briefly what this dietary and medical treatment of cancer consists in, and how it is to be carried out, and also the bearing of all this on the prophylaxis of cancer. In order to make this clear I must more or less repeat some things that I have said in former lectures.

We have seen that, as shown by the kidney excretion and the condition of the blood, the metabolism is deranged, both in the early and late stages of cancer. We have seen that the nitrogenous and sulphur partition is materially different from that of health, and reason indicates that in some way protein, or rather its metabolism, is at fault. We have seen that there is a deficiency in the urinary secretion, not only as to the actual quantity, but also that the total urinary solids are commonly far below the normal, often not half the amount

required for the body weight of the individual. We have seen that the intestinal excretion is commonly imperfect and that constipation is the rule in these cases, even long before the administration of anodynes. The secretion from the skin is also generally defective, and the tissues dry and harsh, and the saliva is generally acid.

All these, and perhaps other, elements point to a faulty performance of the bodily functions, and to erroneous or deficient elaboration and elimination of the waste products of the body; these latter are known to be toxic to animals, and we know that in the human system they lead to an auto-intoxication and derangement of the blood stream, which in turn causes faulty cell and tissue action. Such a condition is recognized in gout, as causing the local inflammatory manifestations, and in rheumatism, which is so common in cancer subjects. All recognize that obesity is due to

some nutritive change, naturally acting through the blood, and it is well known that cancer is peculiarly rebellious in those subject to obesity. Diabetes likewise relates to a peculiar blood condition, and there have been many observations concerning the relation of diabetes to cancer. All these diseases and many more have their foundation in faulty nutrition, depending largely on dietary errors.

We see, then, that to understand and rightly treat the systemic condition belonging to cancer, which is indeed its basic factor, one needs to take a very broad view of the complex processes in the human system which pertain to metabolism and nutrition. This is indeed quite a different proposition from the very simple surgical view which regards the tumor as a local matter, of absolutely unknown origin, which only needs the knife to end its career. Deranged, disturbed, perverted nutrition is then the bottom fact of all erroneous

growth, whether it be obesity or a benign or malignant tumor.

Now it must be acknowledged that we are yet in the dark regarding the exact or precise blood changes which precede and accompany cancer; but in our last and also in previous lectures we saw that the blood did exhibit changes which were evidently connected with the production and continuance of the disease. Until all these matters which have been referred to have been accurately determined by laboratory work and investigation we are forced, as in time past, and as is still the case also in regard to many diseases at the present time, to rest our judgment and treatment on clinical experience, joined with deductive observation, based on such knowledge as we have. And this we have endeavored to do in these and former lectures.

Coming down, then, to the actual and practical facts relating to the dietary and medical treatment of cancer, we readily see

that the real cancer problem relates to placing the patient in such a normal or ideal state of life that the function of nutrition is performed in an exactly proper manner, as nature intended, and from which man has erred through the manifold temptations incident to our artificial existence, in the presence of our so-called advanced civilization; for we have seen that all over the world cancer has steadily increased with the intensity of human progress.

Since first writing on the subject under discussion medical reviewers have spoken as though I regarded the eating of meat as the sole cause of cancer, and enforced absence therefrom as the single element in its cure and prevention. From what I have just said you can see that this is by no means true. But that I regard animal protein as a fertile cause of the derangement of metabolism which leads up to and fosters the growth of cancer, is most certainly

true; this I have developed largely in my lectures two years ago. While there are many elements which contribute to the deranged blood stream of cancer, the question of diet is so preeminently important that we must treat of it very fully. For, as in gout the continuance of an indulgence in Port and Madeira wine in excess would invalidate any attempt to cure the trouble permanently, so in cancer an excess of animal, or even a large amount of vegetable protein, militates against any effort to remove the disease medically; this is probably true also of coffee and alcohol.

The first point, therefore, is to remove from the intake of food everything which furnishes an excess, or even such a modicum, of nitrogenous matter as is found by laboratory means to be badly metabolized. The second step is to eliminate effete nitrogenous elements from the system, including the cancerous mass, and the third

step is to restore the system to a proper tone by remedies and measures which improve the blood and nutrition. It may happen, therefore, that in treating a cancer patient over the long time necessary to effect a cure, the greatest number and variety of remedies may be employed from time to time, as intelligent observation and experience may indicate, to restore and hold the metabolism and nutrition in a perfectly normal state: the erroneous action of certain individual body cells which in the aggregate we call cancer, will then cease to exist, as is seen in cured cases.

As, however, the diet is the basic element on which all health, good and bad, rests it is all important that the physician and patient come to a perfect understanding as to how this is to be carried out. And remember, gentlemen, that there is no absolute or fixed time during which this diet is to be continued; or rather, there is no fixed time when it may be discontinued,

and my patients are made to understand that it is at their own risk that it is stopped. For safety from recurrence a proper diet should be persisted in indefinitely or even permanently.

I recognize that it is often very difficult to persuade patients to adopt and faithfully follow out this course of procedure for a long enough time to secure perfect results, so obsessed is the medical profession and the laity with the idea that surgery offers the only hope of cancer. Numbers of patients, many of whom I have followed for some years, now entirely freed from undoubted cancer, which had been previously diagnosed as such by prominent surgeons, have told me that they had suffered much more distress from the persistent solicitations of their physician, surgeon, or friends, urging an operation, than they had from the treatment or from the disease itself, as it slowly vanished under the measures employed.

But as the true facts in regard to the ultimate results of operations are becoming known, and as it is more generally realized and accepted that the disease is amenable to rightly directed dietary and medical treatment, patients are coming more and more to the Medical Clinic for Cancer in this hospital, and adhering more and more faithfully to treatment. Thus far, however, these have been mostly recurrent cases, in which further operations were impossible, or primarily inoperative cases. To illustrate the satisfactory treatment of early cases I shall have to depend largely on those observed in private practice during the last thirty years, of whom I shall try to show you some; for as yet primary and operable cases are referred directly to the surgeons of the hospital for operation.

At first the idea of an absolutely vegetarian diet is distasteful and seemingly impossible to many patients, but when it

is patiently explained, as to the reason for its employment and the real benefit to be derived from it, it is readily acquiesced in and commonly carried out very faithfully; indeed many a patient has asserted that they are more than pleased, and have no desire for animal food.

Among the poorer classes especially it has been hard to make matters clear, and to facilitate the work of our Medical Clinic for Cancer I prepared a dietary card, or folder, with a daily menu, which has now been in very satisfactory use by hundreds of patients in private and public practice. To make the whole matter of this line of treatment perfectly clear, certain statements in regard to cancer have been presented on the first page, and on the last page some directions as to diet and mode of life of a practical character, as you will see on the samples now passed around, known as the "green card diet slip." I may say that the hospital has already used

up one thousand of these sheets given to patients and to physicians making inquiries, and there have just been printed this revised edition of five thousand copies, which will be gladly furnished to those who can make good use of them for cancer patients.

New York Skin and Cancer Hospital, Second Ave. and 19th St.

DIRECTIONS FOR CANCER PATIENTS

1. Cancer is a serious disease which should receive constant medical care from the time it is first suspected.

2. "Cancer Specialists," who advertise, should be avoided.

3. Cancer is not contagious, and there is no danger of communicating the disease to others.

4. Cancer is not a disgraceful disease, and there is no reason for being ashamed of it or hiding it.

5. As soon as cancer is suspected, wheth-

er there be a lump, or sore, or other symptoms, it should be at once cared for by a competent medical man, as the earlier it is rightly treated the more prospect there is of its being cured.

6. Anything suspected to be cancer should not be handled or squeezed, but should be kept from all irritation, as all this increases and spreads the trouble and renders the cure more difficult.

7. If it is decided that a surgical operation is desirable and wise, this should be done very completely at the earliest possible moment; delay is dangerous.

8. The proper medical treatment of cancer should never be neglected, both at the very beginning, and also long after an operation has been performed, to prevent recurrence.

9. It is not necessary to operate on every cancer; x-ray and radium are often of value, and the disease can also disappear and remain absent under careful and effi-

cient dietetic and medical treatment alone.

10. This treatment consists in an absolutely vegetarian diet, with continuous proper medication, for a long time.

11. To get favorable results this treatment should be kept up faithfully and strictly until discontinued by the physician.

To assist in carrying out a strictly vegetarian diet, a diet list for cancer is here given, which should be closely adhered to. Coffee, chocolate and cocoa, as also alcoholic drinks, even beer, are harmful and must be avoided. The rules given at the end of this card are also to be strictly observed.

Diet for Cancer

FIRST DAY

Breakfast		Dinner	
Baked apple		5 ounces	Tapioca soup
4 ounces	Rice	3 "	Baked potatoes
3 "	Corn bread	3 "	Stewed celery
1¼ "	Butter	3 "	Peas
½ "	Sugar	1 "	Graham bread
Hot water		1¼ "	Butter
		1	Fresh apple

Supper

4 ounces Rolled oats
2 " White bread
1¼ " Butter
4 " Stewed prunes
¼ " Sugar
Very weak tea

SECOND DAY

Breakfast	Dinner
Orange	5 ounces Pea soup
4 ounces Hominy	3 " Macaroni
2 " Graham toast	3 " String beans
1¼ " Butter	3 " Carrots
½ " Sugar	2 " Bread
Postum	1¼ " Butter
	Dates

Supper

4 ounces Cream of Wheat
2 " White bread toast
1¼ " Baked apple
2 " Crackers
1¼ " Butter
¼ " Sugar
Very weak tea

THIRD DAY

Breakfast	Dinner
Banana	5 ounces Corn soup
4 ounces Pettijohn	3 " Baked potatoes
2 " White bread	3 " Squash
1¼ " Butter	3 " Boiled onions
½ " Sugar	2 " Bread
Hot water	1¼ " Butter
	Raisins

Supper

4 ounces Farina
4 " Stewed figs
2 " Graham crackers
1½ " Butter
¼ " Sugar
Very weak tea

FOURTH DAY

Breakfast

Raw apple
4 ounces Cornmeal mush
2 " Graham bread
1¼ " Butter
½ " Sugar
Postum

Dinner

5 ounces Vegetable soup
4 " Baked beans
3 " Cauliflower
3 " Asparagus
2 " Bread
1¼ " Butter
Figs

Supper

4 ounces Rice
4 " Stewed prunes
2 " Graham crackers
1¼ " Butter
¼ " Sugar
Very weak tea

FIFTH DAY

Breakfast

Orange
4 ounces Cracked wheat
3 " Corn muffins
1¼ " Butter
½ " Sugar
Hot water

Dinner

5 ounces Sago soup
4 " Spaghetti
3 " Lima beans
3 " Boiled onions
2. " Bread
1¼ " Butter
Dates

Supper

4 ounces Cream of wheat
Sliced orange
2 ounces Oatmeal crackers
1¼ " Butter
¼ " Sugar
Very weak tea

SIXTH DAY

Breakfast		Dinner	
4 ounces	Samp	5 ounces	Celery soup
2 "	Graham toast	4 "	Baked potatoes
1¼ "	Butter	3 "	Carrots
½ "	Sugar	3 "	Spinach
Postum		2 "	Bread
		1¼ "	Butter
		Orange	

Supper

4 ounces Wheatena
4 " Stewed figs
2 " Saltine biscuit
1¼ " Butter
¼ " Sugar
Very weak tea

Repeat this bill of fare on successive days.

Some interchange of the different articles may be made according to the season and to suit the appetite or convenience of patients; but in the main this bill of fare should be followed, with occasional substitution of similar articles, if necessary.

Bread at least 24 hours old may be taken as desired.

A little old cheese may be grated on the macaroni and spaghetti, but not cooked with it.

One boiled or poached egg may be taken for breakfast every other day, and very fat bacon on the alternate days, unless otherwise directed by the physician.

It is desirable to eat the skin of potatoes, baked or boiled.

Each and every meal should be eaten very slowly, for at least half an hour, with long chewing.

One tumbler of water, not iced, is to be taken with each meal, but not when food is in the mouth; also a tumbler full of hot water, one hour before breakfast and supper.

No milk is to be taken unless specially ordered.

The vegetable soups are to be made from a stock composed of the water in which all

vegetables, including potatoes, have been boiled, added to, day by day, kept hot, and allowed to evaporate; a portion is each day thickened as desired with barley, rice, farina, sago, vermicelli, etc.

The cereals are to be boiled with water, three or four hours, and may be cooked in the afternoon and re-heated in the morning, adding more water. Rice, farina, and cream of wheat require only an hour. Chopped dates, figs, raisins, or currants may be added to cereals when desired.

All the cereals are to be served very hot, on hot plates, and eaten with butter and salt to taste (not milk and sugar). They are to be eaten very slowly, with a fork, and very well chewed.

The crackers with supper may be varied to suit the taste; they should be eaten dry, with butter, and chewed very thoroughly.

Nothing should be taken between meals,

unless especially directed, and the life should be as simple and healthful as possible, with early and long bed hours.

This diet list has been carefully gone over by the dietitian of the hospital, and as presented represents an average of 2,100 calories per day, with 140 of vegetable protein. This is calculated for a person of about 150 pounds, either in bed or not taking active exercise. The quantity of each article may, of course, be increased if necessary, or diminished for lighter weights, but in the main this has sufficed, so that fat persons have come nearer normal weight, while thin persons have gained in flesh. You will remember the girl of 20 years whom I showed you last week, with the right upper jaw gone after an operation for sarcoma, who weighed 89½ pounds on entering the hospital, and weighed 130½ pounds when she sat before you, three to four months later, with the opening in the

cheek perfectly cicatrized on the edges, and all trace of the disease gone, on this diet.

You will notice certain directions on the last page of the folded sheet which are of importance to remember: kindly look them over carefully. I wish to call your particular attention to that in regard to perfectly chewing, masticating, or Fletcherizing the food, even cereals, for at least half an hour. Note also that the latter are to be eaten with butter and salt, and not with milk and sugar, and with a fork, and not with a spoon, in order to encourage slow eating. You will remember that in my previous lectures I called your attention to the fact that the salivary secretion was found to be at fault even in early cases of cancer, and this perfect mastication is intended to stimulate these glands and facilitate the change of starchy foods into glucose; for our rapid eating in modern days may be one of the contributing basic

causes of the perverted nutrition manifested in cancer.

I would also call attention to the preparation of the vegetable soup, which is to be employed in place of the stock ordinarily used, which naturally contains the most poisonous extract of meat, or with milk, which is not desirable. This vegetable stock contains all the salts and other valuable extracts of the vegetables, which are commonly thrown away, to the great detriment to proper nutrition; there is a great loss of nutritive elements also occurring in connection with very many of the so-called refinements of food which are the result of modern civilization. Thus, the United States Agricultural Experiment Bureau tells us that thirty per cent of the nutritive value of potatoes is ordinarily wasted in the common method of peeling and cooking them. This loss of vitamines is also true in regard to wheat and other articles. You will notice that a portion of

this vegetable stock for soup, made from all the water in which all the vegetables are cooked for the whole family, daily, is each day to be thickened and flavored as desired, to which also chopped vegetables may be added and also various cereals, vermicelli, tapioca, sago, etc. I may remark that many patients in private practise have told me that their families pronounced this to be the best soup they have ever tasted. Pardon all these homely remarks, but as attention to details is of the utmost importance in dermatology, so it is particularly true in regard to the management of cancer.

It will be noticed in the menu that I encourage the use of butter, giving a quarter of a pound a day, in three portions. This contains 800 calories, or one-third of the total amount required; a certain amount of sugar is also prescribed, as affording an additional carbohydrate which is completely oxidized under favorable conditions.

It is realized, of course, that this bill of fare may be improved on. But it has been compiled with considerable care and thought, and an experience with it for over two years, in dozens, or rather hundreds, of cases shows that it is workable and accomplishes results which are often surprising and most gratifying, not only in my own practise but also in the hands of other physicians. I have sometimes remarked to you, perhaps thoughtlessly, that if a person had lived for three or four years according to this card, and continued to do so, I could guarantee that he would never have cancer.

So much for prophylaxis. For, as stated before, I feel confident, after many years' observation and experience, that if the principles and practise which I have tried to present to you in my former lectures and these were closely followed by the community at large, there would before long be a very gratifying diminution in the cases

of cancer, and in the mortality therefrom.

You may remember that in a former lecture I mentioned that in an extensive trip I was not able to see or hear of any cancer in the rice eating countries of the East, in Japan, China, India, Siam, and Egypt; although I understand that there is some malignant disease among the natives who adopt foreign habits, or who eat more or less meat, pork, etc. With this experience in view I have sometimes placed certain cancer patients, for a longer or shorter time, on what you are familiar with as my "rice diet," and with manifestly beneficial results. I would not, of course, push it or continue it too long, but as a means of making an impression on a full blooded person, with beginning cancer, and as a means of facilitating the exclusion and elimination of nitrogenous elements from the system, it has sometimes served a valuable purpose. I also continually rather urge the consumption of rice by cancer patients,

as largely as possible, even daily, in place of other cereals.

In regard to the medicinal treatment of cancer it is difficult to be clear and definite, and yet concise within the limits allowed for a lecture. For, as you may imagine from what has been said in these and the previous course of lectures two years ago, there is no one remedy or even any single course of treatment which is to be invariably followed or is always successful in every case of cancer.

In a disease of such uncertainty as to its definite causation, and of such obstinacy and duration from its first inception, the remedies which may be required in different cases are as varied as are the peculiarities of the individual. The treatment requires the utmost diligence and solicitous care and attention to details on the part of both the physician and patient, and over a period of time which it may be difficult to secure. This is rather a different

proposition from that of a relatively brief surgical operation, after which the patient is dismissed with the hope that the disease will not recur!

Patience and perseverance, with medical acumen, are the first requisites—but before this there must be a belief and confidence in the truth of the statements, the correctness of the theory, and the value of the method to be employed; with this there must also be an optimism on the part of the physician which begets a confidence in the patient, which will do much toward reaching the desired result. Unless much time, thought, study, and effort can be given to each case of cancer, I should deprecate any attempt to treat it medically, and rather risk at once the chances of surgery, poor as they are. It was for fear of harm following an incomplete understanding of, and an imperfect or careless carrying out of the line of practise which I had pursued satisfactorily for thirty years and

more that I hesitated and delayed so long before urging it generally. But the steady rise in mortality under the ordinarily accepted treatment has impelled me to strive to make clear what I conceive to be the correct view of its nature and cause, and the approximately correct treatment of cancer.

From what has preceded in these and former lectures it will be seen at once that rational and right internal treatment must proceed and continue along the lines previously indicated relating to the biochemistry of cancer. Some tissue cells have taken on wrong and rampant action, of a reproductive character, owing to an erroneous metabolism, which has induced a deranged or disordered blood current, and some measures are to be devised and carried out to restore the bodily functions to a normal state.

The first line of medical treatment, therefore, after preventing the introduc-

tion of animal protein, coffee, and alcohol by dietary measures, is to seek to restore to normal the various bodily secretions and excretions. The urine, by repeated, complete, volumetrical analysis, serves as a constant guide along many lines, which I considered pretty fully in the former lectures and need not repeat now. In one private case of cancer of the breast the total amount of urine passed each day was measured and recorded daily, almost without an exception, for a whole year, and specimens of the same were carefully analyzed and studied almost every week. The total quantity of solids, which was at first only one-half what the body weight called for, was brought up to about normal as the condition of the patient improved.

It is impossible in a single lecture to tell you of all the indications and teachings which may be learned from the urine, much of which must be acquired by close observation and experience. The urea is

almost always diminished, and this indicates an imperfect anabolism of the body cells, as the urea represents the final metabolism of their nitrogen. Uratic deposits are not uncommon, but other evidences of faulty nitrogenous metabolism also occur, free uric acid, ammonia, aromatic oxyacids, etc., whose individual significance in relation to cancer it is hard to trace, but clinically these derangements seem to have to do with the virulence of the disease. Indican in excess, and often greatly increased sulphates, are common, evidencing disturbed intestinal action. All these and other abnormalities, having to do with a deranged blood current, are to be rectified by proper treatment, the minor details of which cannot be elaborated in a single lecture.

I have told you that imperfect intestinal excretion and constipation are almost invariably found in the subjects of cancer, even in very early stages and long before

they have been induced by opiates given for pain. I may here remark casually that even in severe inoperable cases up to a fatal ending, I seldom have to give morphin when the patients are under a full and complete line of dietary and other proper treatment; these latter seem to so change the character of the blood stream, or act in some way so that there is not the pain previously suffered. Possibly it is in part through lowering the blood pressure.

The subject of intestinal stasis or constipation is, with urinary derangement, such a very large one that it cannot be fully compassed in a single lecture. So I shall take the liberty of speaking dogmatically and shall tell you more or less definitely what observation and experience has taught me to do along these lines of faulty urinary and intestinal action in cancer. And really you will find it similar in many respects to the lines of theory and practise which I try to develop for you in con-

nection with certain diseases of the skin. For, after all, in many conditions of disease we are to treat the patient in regard to a disordered system, and not always so much the particular disease by name. You will also remember that I have told you how it was by observing certain breast tumors which had been diagnosed as cancer by competent surgeons, urging immediate removal, disappear without operation under such treatment as I was giving for other complaints, that led me to my present point of view and practise.

In regard, then, to the actual medical treatment employed I may say that in the Skin and Cancer Hospital, and also in private practise, these patients are almost always first given a certain mixture with which you are familiar, ℞ Potassæ acetatis ʒi, Tinct. Nuc. Vom. ʒss, Extract. Cascar. fl. 3i-3v, Extract. Rumicis radicis fl. ad ʒiv, the amount of cascara being varied according to the action of the bowels, which

should move freely twice daily. This commonly acts also somewhat on the urine. This mixture is always taken three times daily, half an hour before eating, in one third of a tumbler of water.

It is interesting to note that Forbes Ross, a London cancer surgeon, whose untimely death has deprived us of a valuable scientific worker along our present lines, was an ardent advocate of potassium in the treatment of cancer, whose value he established on biochemical as well as clinical grounds. He, however, pushed the administration of the salts of potassium far in excess of that which I have found necessary. He has related instances of advanced cancer in which the results were remarkable, and one of them, a case of cancer of the uterus in a widow aged 59, was quite a counterpart of one which I shall narrate to you next week. I wish I could give you *in extenso* some of the remarkable arguments from microscopic and chemico-

physiological study which he gives, to explain how potassium has such a controlling effect on cancer cells; but it is quite out of the question in a lecture such as this to enter fully into every enticing field of inquiry, and I must refer you to his valuable work. I am quite aware that when published this book was the subject of some criticism and even ridicule, but reviewers could not have properly grasped the whole book, which was simply so far ahead of the times that it was not understood. Cancer was then, even more than now, in the grip of the surgeon, who resented any thought of treatment other than by the knife.

Dr. Ross had operated much in cancer, but, realizing the inefficiency of surgery to cure the disease, he wrote very severely in regard to cancer surgery in the opening chapter of his book. After "ten years of constant microscopic, clinical and surgical research," he advanced the hypothesis that

"cancer is due to a want of balance in particular mineral salts of the body, and that the disturbance of this balance leads to the disorderly and malignant growth of epithelial cells (epiblastic and hypoblastic) which is professionally known as Cancer or Carcinoma," and that the main disturbance is in regard to the potash balance in the body. By very careful deductive and inductive reasoning, and by actual experimentation and practise he shows how this answers and explains more of the puzzles and intricacies of the cancer problem than any other hypothesis. In the previous chapter I referred somewhat to his interesting studies on cell polarity, the red blood cells, and the probable rôle of mononuclear leukocytes in inducing cancer-genetic changes in the tissues.

Pardon this rather long reference to Dr. Ross, who was much misunderstood by his fellow practitioners because of his blunt expressions and his presentation of a new

thesis regarding cancer, which was not grasped, and, as far as I know, has been neglected by the profession; his book was published in 1912, and has only rather recently come under my notice. He died the following year, but at the end of the book, three months after it was written, he added a note stating that "all the cases described therein have continued to improve under treatment, until some of them have practically ceased to be cases of recognizable cancer."

It is, therefore, not a little satisfactory to find from a cancer surgeon such microscopic, biochemical, and clinical explanation and support for the treatment which I have followed for thirty years and more, and which I am now presenting for your consideration. Dr. Ross makes three references which in a measure support the potassium theory of cancer.

1. "The old physiological adage 'Potassium is the salt of the tissues, and sodium

the salt of the fluids of the body' still holds good as an absolute physiological truth.''

2. ''Animal physiology teaches us that the whole range of the animal creation, from an ameba to man, follows the same law, 'Potassium is the salt of the tissue cell.' ''

3. ''Examination of the botanical world brings us face to face with the same identical statement 'Potassium is the salt of the chemical physiology of the vegetable cell.' ''

The first treatment, therefore, which is given to these patients is potassium acetate, as previously mentioned, in combination with nux vomica, and some cascara, and rumex fluid extract; this latter is one of the old alternative remedies which I have used for years with most favorable results in certain skin diseases. In some of the cases related two years ago and in some of those I shall report in the next lecture, this mixture, with little variation,

has been employed almost from the first to the last, with occasional alternation with other remedies. Dr. Ross has used principally the citrate of potassium and phosphate of potassium combined, which he gave in doses up to 90 grains per day, and even more. I have quite recently used the same, though in smaller doses, but it is too soon to report any results, and do not know if they will serve better than the acetate, which I have so long employed. Dr. Ross makes the interesting statement that, having used enormous quantities of potash salts in his practise for fifteen years, for various complaints, not one single case of cancer had ever to his knowledge occurred amongst the clientele of his own practise, though he had constantly been engaged in operating on cancer sent to him by other medical men. I made much the same remark in one of my former lectures (p. 152), though I did not ascribe it wholly to the acetate of potassa which I have long used

so freely, but to the additional normal salts which I got from a strictly vegetarian diet.

I would not have you to understand that this is all that is to be done medically for cancer patients; on the contrary, as the case goes on over a period of time, a thousand changes may be necessary to meet symptoms as they present themselves. And here arises the difficulty of making exactly plain wherein lies the successful internal treatment of cancer; for unless just the proper care is given at the right time all may not go well. For this reason these patients should be seen at least once a week, and for months, and the exact state of the system learned by volumetric analyses of the urine and occasional studies of the blood, in addition to the ordinary watching of the pulse, tongue, sleep, mode of life, exercise, fresh air, absence of worry and nerve strain, diet, etc.

Iron is a very important element in the

treatment of these patients, though sometimes it will be found difficult to have it rightly taken and properly assimilated. I have come to use largely the pyrophosphate of iron in powder, in five grain capsules after meals, in conjunction with the mixture referred to, half an hour before meals. Sometimes dialyzed iron, half to one teaspoonful in water, taken in the middle of the meal, acts best, though I prefer the pyrophosphate, as phosphorus in some form should always be given for some time to these patients; it is to be remembered that the iron, potassium and other elements of the blood cells are united as phosphates. Occasionally I have to give the acetate of potassium with nux vomica and infusion of quassia after meals, in place of the other mixture, which after a while may be distasteful. But remember that potassium is the sheet anchor, and also that in some way the solids in the urine must be kept up to the standard of health,

as I mentioned in a former lecture, which I occasionally accomplish by adding sweet spirits of nitre, etc.

I have emphasized imperfect intestinal action as a most important element in the probable causation of cancer, and the regulation of this function will often require the very greatest care, patience, and often even ingenuity on the part of the physician. The stools should really be frequently inspected. It is not enough to inquire at each visit if the "bowels are regular," but the matter must be patiently investigated, as to the character, quantity, color, odor, hour of defecation, which should be after breakfast, etc. Nor is it enough just to order purgatives or laxatives from time to time, but such attention should be given, and such remedies and measures applied, as will secure the best possible performance of this most important function. The mixture just spoken of, altered as required in regard to its cascara content, will often

suffice, but many of my patients also secure a full and free intestinal relief each week, by means of the old pills which you hear me order so often in this clinic: ℞ Massæ hydrargyri, Extr. Colocynth. Comp. āā gr. x, Pulv. Ipecac. gr. ii. M. Div. in capsules No. IV. Take 2 at bedtime and 2 the second night after. I also use greatly the excellent combination of ℞ Podophyllin, Cascarin, Aloin, āā gr. ¼, M. one or more of these at bedtime, as needed. I do not approve of mineral waters or saline laxatives in these cases, nor of mineral oil, and never employ enemata, except for emergencies.

I hope I have not wearied you too much with these homely details, but I assure you, gentlemen, that they are not in vain, and I only wish I could go over these and other matters yet more minutely. My experience with cancer for years has taught me well its seriousness, which I have no desire to minimize. Its dietary and medicinal treat-

ment is no small matter to undertake, and should never be lightly entered upon. When the diagnosis of cancer has been definitely made by one or more medical men or surgeons competent to do so, the patient unfortunately is fully imbued with the very serious character of the malady, and most of them know well of the very slim chances of a permanent cure offered by surgery.

Few know, however, of the hope of a cure which can be extended to them by dietary and medical means, if they are perfectly faithful for an indefinite length of time, and if the case receives adequate and proper medical attention. It is for those of you who have heard these and the former lectures, and have seen the cases, to act with confidence and assurance, and give the utmost diligence and attention to details in order to obtain similar results; for I assure you, gentlemen, that thereby you can secure a success in cancer which is many times that following the practise

of surgery, judging from the distressing and steadily rising mortality records up to the present time.

Do not be discouraged with apparent want of success at first, especially when you are treating inoperable or recurrent cases—for those are always depressing. But with more recent cases, such as I have reported in the former lectures and will mention in my next lecture, you may be pretty sure that if every feature of treatment is perfectly carried out you will attain a measure of success which is very gratifying.

LECTURE VI

RESULTS: PERSONAL CASES

Two years have elapsed since I said to you in the last lecture of the former course, "The test of everything lies in the results obtained. Theories, discussions and arguments are all unavailing unless results show their truth." I can now repeat the same phrases after two years' further observation and experience. And I can also speak much more strongly than I did at that time, not only after testing the matters then presented further, in private and hospital practise, but also after an amount of study of literature which I should hardly have thought possible some years ago.

First I want to recall to you the report of the interesting and remarkable case which was made at our last lecture by Dr.

C., one of your number, who promised that if possible the patient would be presented at a later lecture. This was in the person of a lady, now about fifty, seen nearly ten years ago, who presented a great mass of disease in the lower abdomen. On consultation it was decided to attempt an operation, which was performed by Dr. ———, a well-known surgeon. On opening the abdomen there was found an amount of malignant tissue, involving many organs to such a degree that it was decided that no removal was possible, and the wound was closed, after securing a section for microscopic study. This was examined by Dr. H., a well-known pathologist, and found to be sarcoma.

About that time, nine or ten years ago, I had briefly spoken in one of my lectures about the value of an absolutely vegetarian diet and medical treatment in cancer, and Dr. C., thinking, as he told us, that it might possibly be of advantage to her, in pro-

longing life or perhaps making it more comfortable, placed her upon it. He has followed the case up to the present time, and stated to us that there was now no evidence of the disease, the abdomen being normal under every examination possible. Surely one such case should be sufficient to direct serious attention to a plan of treatment capable of securing such a result in a patient who is now living in comfort, nine years and more after the surgical removal of the tumor was found to be impossible, and who would otherwise have been dead long ago.

In my former lectures I detailed eight cases of undoubted breast cancer, verified by surgeons, some of them well known, in which the results obtained by the methods I have been presenting were most gratifying, and I need but refer you to the account of them given in my book in which the lectures were published.

You will perhaps remember that the first

two cases had been followed up for sixteen years and had remained well, without operation; the next two cases, curiously enough, had each been observed for over nine years, and as they are still under my medical care for various complaints I can add two years more, making over eleven years that they have remained well, without operation.

In those lectures I stated that I had recorded on my books in private practise a total of 744 patients with Epithelioma, Carcinoma, and Sarcoma. I now find recorded in private and hospital practise a total of 196 cases of carcinoma, 36 of sarcoma, and 685 of epithelioma, a total of 917 cases of malignant disease. There are also records of some dozens of cases of adenoma, cysts and chronic mastitis, etc., of the breast, besides fibroma, lipoma, angioma, papilloma, etc., generally benign in character, in various locations, all of which are, of course, excluded from our study.

Epithelioma.—Although epithelioma of the skin is included with cancer in the Mortality Tables of the United States and elsewhere, I do not purpose to admit it in connection with the results of treatment of cancer, for several reasons. First, Because cutaneous epithelioma occasions but a very small proportion of the deaths from cancer, something over three per cent. Second, Because its cause and treatment are almost entirely local, and so it does not relate greatly to our general inquiry as to the internal or constitutional cause and treatment of real cancer. Third, Because dietary and medicinal treatment seem to have relatively little, if any, effect on cutaneous epithelioma, except in the later stages, where the disease has caused great ravages, and lastly, Because if the proper treatment of cutaneous epithelioma is begun early and carried out faithfully it need never, or exceedingly seldom, acquire a severity such as is often depicted by over-

zealous surgeons who advocate only the knife.

In regard to epithelioma on the skin and also on the tongue, lip, and oral cavity, however, I want to give you one word of caution, and that is in regard to the use of nitrate of silver. I have seen so many epitheliomatous lesions in these regions which have been goaded on to a severe degree of ulceration by the injudicious and meddlesome "touching up" of the same with nitrate of silver, that I would make it an axiom to never use this superficial caustic at any time in connection with anything which may possibly be epithelioma. I would almost consider it criminal to do so. On another occasion I may take up the subject of epithelioma very fully, but already I have shown you many interesting cases, demonstrating how it can be cured by intelligent and faithful treatment without surgical operation. Some of you may recall the enormous ulcerating epithelioma

on the left ear of a man of about fifty, who showed himself repeatedly after the disease had been entirely cured by the thorium paste, which you have often seen me use. You may remember that the upper portion of the pinna was gone, but presented a thin, delicate cicatricial surface, freely movable; the last time he was here was fully two years after it had been entirely well.

It is not worth while to attempt to analyze here the 685 cases of epithelioma mentioned, many of which were small and very superficial, and easily cured. There were, however, many cases which were originally classed as epithelioma which sooner or later, either with or without a previous surgical operation, took on such a malignant action, with a destruction of tissue, as would at once class them with carcinoma. In reality, as you know, carcinoma is but an aggravated or malignant new growth of epithelial cells, from the skin or glandular

organs, infiltrating the surrounding tissue; while sarcoma is a somewhat similar malignant proliferation of connective tissue cells.

The ordinary distinction between epithelioma proper and carcinoma is, therefore, vague and not scientific, and for the present will probably have to rest on the basis of a superficial, or deep cellular, disturbance. But, for the reasons already given, I protest against including all instances of epithelioma under cancer, as in the propaganda for early operations, and I do not include the mass of them in my studies as to the results of treatment. Inasmuch as the border line between the superficial and deep epithelial misbehavior is often so indistinct, it is difficult to designate as carcinoma all that might possibly belong there, but certain of them should be mentioned. In looking over the records of my patients in private and public practise I find at least 80 with the diagnosis of epi-

thelioma whose disease was so malignant in its course that they should certainly be included in the carcinomatous class; these, therefore, appear in the following table, which gives also the sex and location of the cases, both of carcinoma and sarcoma:

PRIVATE AND HOSPITAL CASES

Carcinoma	*Male*	*Female*	*Total*
Breast	1	147	148
Uterus	..	8	8
Stomach	7	5	12
Liver	2	2	4
Lip	19	3	22
Mouth and tongue	17	3	20
Pharynx and esophagus	2	1	3
Jaw and neck	10	..	10
Nose	5	3	8
Orbital region	3	1	4
Penis	5	..	5
Other localities	12	17	29
	83	190	273
Sarcoma			
Head, face and neck	12	6	18
Trunk	5	6	11
Extremities	3	4	7
	20	16	36
Totals	103	206	309

Carcinoma of the Breast.—Of the 147 cases of carcinoma of the breast in females the right breast was affected 64 times, the left breast 77 times, and both breasts 6 times. Of these cases 74 had never been admitted to surgical operation; 59 had been operated on once, 12 twice, 1 three times, and 1 four times, with recurrence, or rather with continued development of the disease. In 28 cases a surgical operation was advised and performed by various surgeons, either before internal treatment or after a trial for a greater or lesser period; in eight of these it seemed wise to have an operation after a more or less faithful trial of medical treatment. I may here remark that it is very difficult to hold all patients firmly to the dietary and medical requirements necessary to remove the disease, and many dropped off after a short trial, while quite a number, 77, were seen only a few times or in consultation, and were thus lost sight of. There were 101

married or widowed females with cancer of the breast and 41 single, and 5 unknown. The average age was almost 50.

The total number who were under dietary and medical treatment for a sufficient time to form any judgment from, amount to 41, while a considerable number are still under treatment and improving. It may be noted that the first case of carcinoma I find recorded was on September 29, 1879, the second on October 31 of that same year. Many of the early cases were noted accidentally, in patients coming for various diseases of the skin.

Time does not permit my dwelling on many interesting points concerning some of the cases represented in the foregoing table, but I want to relate and present some cases illustrating the beneficial effect of carefully directed treatment in this class of affections.

Before doing so, however, I want you to inspect a private patient, Mrs. R. F. C.,

aged 50, who has only to-day for the first time come on from a distant city for treatment, and has kindly consented to come before you, veiled. The case presents many features well worthy of consideration, and I hope on some future occasion to be able to report favorably concerning her; although, as you see, it is quite an inoperable case, or at least one in which the disease would certainly recur if treated with the knife. The entire left breast is greatly enlarged, like half a melon, hard, firmly attached, and with the axillary glands greatly involved. It is interesting to know that she was first conscious of a lump in the breast on September 1st, only thirteen weeks ago, and all this has developed since. She presents the usual picture commonly seen in these cases, namely, constipation, urine scanty and deficient in solids, and the saliva acid. She still appears to be in robust health, as is so common early in the disease.

The first case showing the effect of dietetic and other non-surgical treatment to which I would call your attention is the private patient who so kindly exhibited herself, veiled, at our lecture week before last. I showed it then purposely as a case undergoing treatment, now for eight months, in which there was still evidence enough of the disease, with the history presented, for those who examined it to confirm the diagnosis of unquestionable cancer.

Case I.—Miss T. M. M., aged 37, consulted me on March 23rd of this year, for a mass in the left breast which a surgeon of great eminence had diagnosed as cancer, and urged most strenuously an immediate operation, and from its rapid development had said that she would die within six months if not operated on. She had had a neurasthenic breakdown the preceding autumn, and for some months had now been under a very great nervous strain, with a

father aged 71, who was slowly dying of Bright's disease. Two years ago she had suffered severely from uricacidemia, for which she had dieted six months.

The mass in the left breast was noticed only a month or two previous to her visit and had increased rapidly; when seen there was a hard, lobulated mass about two inches in diameter, in the outer, upper quadrant of the left breast, attached to the puckered skin over an area of more than an inch; there were also a number of enlarged, hard axillary glands. There was considerable pain at times, which had been increased considerably by the rather rough handling of the surgeon.

She was placed on an absolutely vegetarian diet, following what I call the green card menu, which I gave you in my last lecture, and a mixture of acetate of potassium, nux vomica, fluid extract of cascara and fluid extract of rumex root, which I also mentioned to you at that time.

For eight months she has been under my constant observation every week or two, and the improvement in her general condition and in the breast tumor is very marked; you heard her say that she felt a thousand per cent better. Her color is excellent, she has held her weight, 153 pounds, which is a trifle above that called for by her height and age, and all this in spite of daily office work and very great trouble and anxiety in nursing her sick father for thirteen weeks, who died in October.

The breast, as you see, has still a lump in it, but it is soft and hardly half the original size, the area where the skin was attached has decreased, so that there is now only this slight dimpling or puckering, and the enlarged lymphatic glands in the axilla have disappeared.

It is impossible in a brief lecture to enter upon all the details of treatment followed out during these eight months, for they

have been varied according to the principles laid down in these and the previous lectures. The former habitual constipation has been overcome and the urine, which exhibited a great shortage of solid constituents, with occasional indican, etc., has attained more nearly a normal character, and in various ways she has regained better metabolism. To accomplish all this there have been many remedies used from time to time to meet various indications, as are shown by my voluminous notes every week or two. I may add that the affected breast and axilla have been kept painted with ichthyol, 50 per cent solution in water, which for some years I have found to aid in the absorption of malignant lesions. The patient is not well, by any means, and it will be some months before the mass in the breast has entirely disappeared; but instead of being dead within the six months, as prophesied, she is as healthy, happy, and hearty a woman as one could wish,

after eight months, under very adverse circumstances, without pain, not having lost a day from work, and with the tumor steadily diminishing.

I am often asked if the cure is permanent after this line of treatment? In answer I can only refer to the cases reported in my former lectures, where two were observed well after sixteen years and two after eleven years. I may add also that if there is recurrence, and if the principles which I have long advocated are correct, the recurrence would be due to the same causes which produced the original trouble, possibly a neglect of full treatment, and one would expect that a perfect following out of proper treatment would again check the trouble, which is more than can be said of surgery. Personally I have never seen recurrences, though, of course, this may have happened and the patient being discouraged may have yielded to the solicitation of friends and to the knife.

Case II.—Mrs. J. J. T., aged 38, was first seen August 11, 1914. She had been confined with her first child 4 months previously, but had not nursed the baby at all, and had no trouble with the breasts. Four weeks before her visit she had noticed a tumor in the upper left segment of the left breast, which had increased steadily, with considerable pain. When seen there was a mass the size of an egg, hard, and well defined, somewhat tender on manipulation, with some glandular enlargement in the axilla. She was placed on an absolutely vegetarian diet, with no coffee, and the same mixture as the preceding case, the bowels being constipated, and the breast was kept painted with the 50-per-cent ichthyol, which was afterwards changed to iodid of lead in Hebra's Diachylon Ointment. Later she took thyroid extract, also iron, etc., and maintained her weight and strength perfectly. The mass in the breast disappeared rather slowly, and it was not

until just a year later that I find it recorded that the breast was perfectly normal, with no trace of the tumor, nor axillary adenopathy. She was again confined of a healthy child in June, 1916, and the surgeon who had made the original diagnosis of cancer reported the breast perfectly normal. Seen recently she still remains absolutely free from trouble.

Case III.—Mrs. I. T. G., aged 43, first noticed a lump in the left breast two weeks before her first visit, May 17, 1905; this had been diagnosed as cancer by at least four medical men, one of them a prominent surgeon in Hartford, who urged immediate operation. When seen there was a hard, sharply defined mass an inch and a half in diameter in the left breast, above the nipple; it gave pain and was painful on pressure. Beginning with the same treatment as the other cases mentioned the change in the tumor was most remarkable, and eight weeks later it was recorded that

there was no trace of the tumor, that both breasts were alike. She was a large, flabby woman, weighing 207½ pounds, the kind who do so badly after operation. She maintained her treatment faithfully, with an absolute vegetarian diet, and when seen two years later weighed still 199 pounds, with no return of the breast trouble. She was seen last for quite another trouble five years and a half after her first visit, and the breast was found perfectly normal.

There is no necessity of illustrating this part of our subject further, but I wish to make a remark about this last case, especially in reference to the desirability of early treatment. We hear much from the advocates of the knife that it should be used early, and yet we all meet cases where lumps are removed from the breast almost as soon as they are discovered and yet there is recurrence. Early dietary and medical treatment, in this instance two weeks after discovery of the lump, was

observed to be followed by perfect freedom for five and a half years, and beyond question permanently, if she continues to live along proper lines.

Having now seen how very much can be accomplished in primary cases, that is, in those who have not been submitted to an operation, let us consider what can be done for those truly pitiful cases where surgery has been tried and failed, and where one or many successive recurrences after repeated operations has left the patient even worse than before; and, as some surgeons tell us, worse than the patient would have been if the disease had been left to nature, without operation and with only ordinary medical guidance.

In regard to the cases with recurrent cancer after operation of which there were 72, it can be readily understood that one cannot speak with enthusiasm. But in my former lectures I reported three such cases in which the benefits were certainly very

remarkable. I also reported from private practise another totally inoperable cancer of the breast, of two years' previous duration, with great cachexia, in which the enormous, hard, ulcerating breast was reduced to about half the extent, with a diminution in the large axillary and supraclavicular glands to fully one half their size. The patient suffered no pain from soon after beginning treatment until she peacefully died six months later, of exhaustion and pulmonary edema.

In many cases, both in private and hospital practise, the beneficial effect of a dietary and medical treatment have been very striking, even after recurrences following repeated surgical operations; but it would be unreasonable to expect any startling effects in cases which had become so saturated with the poisonous hormone generated by repeated new developments of cancerous tissue that there were numerous metastases, not only in internal organs and

lymphatic glands, but also with cutaneous nodules produced in various parts of the skin through capillary infection.

And yet in most of these cases there has been a betterment of condition in nutrition, color, weight, etc., which sometimes seems to encourage one that the real disease would be conquered. But although life has frequently been prolonged far beyond what might be expected, and discomfort and distress have often been greatly lessened, we have not yet reached the position of checking and curing far advanced cancer at all comparable with what can be accomplished in its early stages. I dislike to weary you with the narration of cases, but a few instances may help you to understand what is meant.

Case IV.—Mrs. D. S., aged 53, first seen July 6, 1916, is a rather recent case of recurrent cancer of the left breast, in private practise, but it is instructive. Over five years ago a small pimple, as she called it,

appeared on the left side, which was left alone for five years. Then on January 21, 1914, the left breast was removed by a surgeon of prominence, and all seemed well for six months, when there was some return and a second operation was performed in January, 1915; there was again a third removal in April, and a fourth in August, 1915, all by the same excellent surgeon, and the wound has never healed since. There had never been any attempt at dietary or medical treatment or any effort to check the causes producing the malignant growth.

Since January, 1916, there have been many cutaneous nodules developing around the open sore, which when first seen presented a characteristic ulceration eight inches long, by two or three inches irregularly wide. The axillary glands were enlarged and the left arm, which had been greatly swollen since the first operation, was hard, tense, and painful, and, of

course, helpless. The forearm measured 13 inches and the upper arm 14 inches, the right arm being 8½ and 9½ inches, respectively. Her weight, which had been 168 three years ago, was reduced to 133; she was always very constipated and her urine deficient and irritating, calling her also at night; she had long suffered from rheumatism, and also severe headaches up to the menopause, seven years ago.

Under a rigid "green card diet" and the mixture already referred to, with a larger amount of cascara, she began to improve at once in her feelings, the arm became softer, and somewhat flabby, and the nodules, which had been painted with 50 per cent ichthyol, were less prominent. Later thyroid extract being added after meals, brought her weight down a little, but during the last months it had been maintained steadily at about 120 pounds. The urine which at the first was sometimes only 26 ounces in the 24 hours, with great

deficiency in solids, has been brought up some days to 45 ounces, with the proportion of solids to the body weight about right. The saliva, which was very acid, is much less so, though still acid and scanty, and the mouth dry.

Not to dwell too long on the case I may say that I find a recent note to the effect that she said that she feels very well and friends think that "there cannot be much the matter with me." But she still has a considerable ulcerating surface, though with islands of healing; she still has many metastatic nodules in the skin in various places, and the arm, which is still swollen, though no longer tense, is smaller, and, really, the flesh shakes when the arm is quickly moved.

This is certainly a desperate case, after four operations, but the difference between her present condition and what she would have been without treatment can hardly be imagined. For in these five months she

probably would have been in her grave, whereas, during all this time she has been traveling back and forth from her home, some distance away in New Jersey, to my office, a happy woman. What the end will be I cannot foretell.

I want you now to see and examine a Bohemian woman who has been treated in my medical clinic for cancer at the hospital since July 26, 1916, something over four months.

Case V.—Mrs. P. A., aged 46, noticed a lump in the left breast two weeks before it was removed, in this Hospital, two years previous to her first visit to me at the medical clinic for cancer in the hospital. Three months later the right breast was also removed on account of a lump found there. All seemed to go well until about a year ago, when cutaneous nodules appeared on the chest, first around the site of the former operations; these increased till seen, when, as she now tells you, there were fully

fifty of them, forming a veritable *cancer en cuirasse,* absolutely inoperable, of course. She was habitually constipated, depending on medicine.

Being placed on the "green card" diet and the same mixture, though with considerable cascara in it, and all the affected area painted night and morning with Thiol in olive oil, fifty per cent, she seemed to improve at once, and it was recorded that, after removing a crust which had formed with the thiol and talcum powder over it, all the nodules were less red and much less elevated. A small raw surface had formed, which was touched with thorium paste, diluted to 25 per cent. This surface was found entirely healed two weeks later, but other larger raw surfaces have formed from time to time, which, however, have all healed completely and perfectly, as you can see, with the occasional use of the diluted thorium paste.

As you see her now the entire surface

over both sides of the chest is perfectly healed, and passing my hand over all the surface there is hardly a trace of the nodules which once were so abundant. All who know anything about the ravages of cancer will realize the difference between her present condition and what would have happened under ordinary circumstances. She has had no pain since soon after beginning treatment.

I could multiply these histories indefinitely, with, of course, varying degrees of benefit, but I will trouble you with only one more case, that of one of the many patients in the wards of the hospital. In this case there were at first very satisfactory results, but after a long and brave fight on the part of the patient she at length succumbed to the dire disease.

Case VI.—Miss J. M., aged 53, was admitted to the New York Skin and Cancer Hospital, July 16, 1914. One year before there was an enlargement of the right

breast, with a general hardness. Later it became discolored and a blue ring appeared around the whole breast, and some purulent discharge from the nipple. Three months before entering the hospital the breast softened in one place and ruptured, discharging pus and blood. There had been some pain from the beginning, and latterly it was more constant and severe. On admission the tumor involved the whole breast, which was hard and immovable, with an ulcerating surface over almost the whole extent, with an offensive discharge, and axillary glandular enlargement. There were also small cutaneous nodules near the sternum.

She was transferred as inoperable from the surgical to my service on August 26, 1914; she weighed then 106½ pounds, and presented a great fungous mass on the right side about six inches in either diameter, with a profuse and very offensive discharge; she was very weak, with a septic

temperature running up to 101 and over, and complained greatly of pain in the tumor. She had been having X-ray once a week, which was continued for a while twice a week, for twenty-four exposures, but without apparent effect. She was very constipated and passed a small amount of urine.

She was placed at once on a vegetarian diet (green card) and the same mixture as the other patients, for a while, and a little later was given dialyzed iron during the meals; the wound was dressed with a one per cent solution of permanganate of potassium, later with Russian oil, with some use of peroxid of hydrogen to check the suppuration.

For a while she seemed to do remarkably well, the color and strength improving, with less pain and very comfortable nights, without an hypnotic. In a week her weight had increased to 110¾ pounds, but then it fell off a while, but on October 28th it had

risen to 111¼ pounds. As there was still a great mass of fungating tissue, helping to keep up the toxic condition, quite a portion of it was excised on September 29th, just after which the hemoglobin rose from 75 to 80 per cent, which was maintained for six weeks, the red blood corpuscles increased to 3,490,000 and the leukocytes diminished to 8,500 from 10,000 when she first came under my care.

The general condition had improved so greatly that she was out of bed all day, but the body weight dropped quite a little, to 104½ pounds, only to rise again four weeks later to 111¼ pounds. By October 10th the wound was secreting very little, she slept well with no opiate, and complained little of pain, day or night, and by October 28th it seemed as though the disease was being overcome, as there was some evidence of cicatrization in certain portions of the wound. All this continued for a month or more, when she had a num-

ber of severe hemorrhages from the wound and the hemoglobin fell to 60 per cent and the red corpuscles to 2,100,000. From this, however, she rallied under an intravenous saline injection and Murphy drip, and the hemoglobin rose to 75 per cent, and on May 21st the red corpuscles were actually 4,110,000.

I must not weary you with too many of these details, nor can I indicate to you the varied treatment which was employed from time to time. I can only add that she had her ups and downs, but finally succumbed on July 3rd, 1915, about a year after entering the hospital.

The case was a very interesting one and exhibited certainly some of the beneficial results of treatment, although in such a hopeless case, with such a mass of ulcerating cancerous tissue as she presented, secreting its poisonous hormone, any other end could hardly be expected. There is no question, however, but that life was

greatly prolonged and much comfort secured, as to sleep, diminution of pain and offensive discharge, etc. The case was watched with interest by members of the attending staff, and careful laboratory studies of the blood and volumetrical analyses of the urine were made weekly; the latter was generally scanty, running even as low as nine ounces a day, though of a fair specific gravity, and it was very difficult to raise the total solid urinary output to anywhere near a normal standard. The saliva, tested and recorded before and after each meal, was commonly acid, often strongly so, though at periods it would be neutral and occasionally became alkaline for a while under active treatment.

I have taken up so much of your time with cancer of the breast that little is left for consideration of the disease in other localities, and I will be as brief as possible:

Cancer of the Uterus.—Two cases, in

private practise, among the eight of cancer in this location which are on my list, are so interesting and remarkable that I must give them somewhat in full. I may say that the other cases had little or no satisfactory treatment. One of these two would gladly present herself for your inspection, that you might verify her present condition of excellent health, but she lives in Bangor, Maine, and now only comes on periodically; this is in order to be sure that she continues in the straight and narrow road necessary to keep her free from her previous distressing condition. The case is as follows:

Case VII.—Mrs. F. L. A., aged 48, weighing 105 pounds, was first seen on March 21st, 1916. She had had four children aged 22, 20, 17, and 12 years, and had had a miscarriage 9 years ago. There had never been any trouble with confinements, and never laceration of the cervix. The menopause had occurred suddenly two

years previously, but she had had some vaginal discharge since October, and had felt weak for some months. She had, however, never suspected any serious trouble until there was a slight hemorrhage, consisting of only a few drops of bright blood, on February 24th. That afternoon she was examined by a surgeon at home, Dr. McCann, of Bangor, Maine, who sent her to me. He discovered that she had already an inoperable cancer of great extent, which diagnosis was confirmed by others, who refused to operate. The report which came to me from the department of Pathology and Bacteriology of Bowdoin College was, "About one third of the cervix destroyed, vaginal wall involved. Right broad ligament infiltrated." Curettings were made then, which from "numerous slides show squamous cell carcinoma. From histological appearance I judge that the cancerous process is developing rapidly," signed F. N. Whittier. The slides which were

brought to me were submitted to Dr. H. H. Janeway, who confirmed them to be "rapidly growing, malignant epithelioma." Those who saw the patient on February 24th gave the opinion that she would hardly live six months.

She had been following an absolutely vegetarian (green card) diet for a week or two, and had been taking some compound cascarin tablets, which I had sent her (℞ Podophyllin, Aloin, Cascarin, āā gr. ¼), as she had always been very constipated, and since this treatment had felt much better in every way. I gave her douches morning and night, of carbolic acid and bi-borate of soda, 3ss and 3ii ad Oi hot water.

I then sent her to Dr. H. H. Janeway, who confirmed the physical condition and gave her one single treatment with emanations of 300 milligrams of radium, for 16 hours, on March 25th, dilating the os, but not curetting. She was then given ℞

Potass. acetatis ℥i, Tinct. Nuc. Vom. ♏iv, Extr. Cascara fld. ♏ii, Ext. Rumicis rad. fl. ad ℥iv, Teaspoonful in water half an hour before eating, which she has taken more or less continuously ever since, alternated with other remedies as indications arose. Later she took pyrophosphate of iron, five grains after meals, in conjunction with the mixture. For some time she had suffered from severe neuritis in the neck and arm, which yielded completely to aspirin, five grains every two hours, taken also again on several occasions when it recurred.

I will not burden you with the many details recorded on her case paper, but can only say that to-day she is as well a woman in every way as one could wish. Her color is good, and a recent examination of her blood showed hemoglobin 80 per cent, red blood cells 4,500,000, leukocytes 5,800, of which polynuclears 64 per cent, lymphocytes 27 per cent, transitionals 8 per cent, and eosinophiles 1 per cent. She has made

the trip back and forth from Bangor, Maine, half a dozen or more times, without fatigue, recently walked several miles, eats and sleeps well, is no longer constipated, and has a good urinary excretion, with rather an excess of solid contents; on December 6th she weighed 110½ pounds; her normal weight before her sickness had always been 93 pounds.

On June 2nd she was examined by Dr. Janeway, who reported: "I find no ulceration whatever on the cervix or vagina, the uterus is movable and of normal size. There are no evidences of any disease remaining which can be detected by examination." On July 7th he wrote: "I have examined Mrs. F. L. A. again and find that there has been no return of the evidences of her disease." On October 20th he wrote: "Mrs. F. L. A. appears to be absolutely free from disease." Her surgeon, Dr. McC., confirmed all this by examination. It is now over 9 months since she

was given 6 months to live, with an inoperable uterine cancer, and to-day is in better health than she has been for years.

This patient had one single application of radium, as mentioned, on March 25th, which probably aided in modifying the local disease, but it would be beyond human credulity to believe that this was a very large factor in restoring her to her present condition of health. The cure is, of course, a very recent one, but there is no reason why the same measures would not be effective should there be any return, as they are directed against the real cause of the disease. Nor is there any likelihood that there will be any possible relapse, as she is a most intelligent patient who adheres strictly to the treatment and diet, and will undoubtedly do so until directed otherwise.

Strangely enough another very similar case was also sent to me from Bangor, Maine, which I will mention very briefly:

Case VIII.—Mrs. H. F. J., aged 52, weighing 102 pounds, was first seen August 3, 1916. She had been under an absolutely vegetarian diet (green card) since July 17th, and was feeling better than before. She had had three children, 27, 25, and 16 years of age, the menses had been regular up to April 15, then nothing up to July 1st, when there was a clotted flow, checked by treatment, which had returned in two weeks, with pain, after an auto ride. On July 14th she was examined by two physicians who found cancer of the cervix, which was confirmed by Dr. Janeway on July 31st, who reported "cancer of the cervix and vaginal canal, with some cauliflower excrescence; the uterus was not much enlarged or fixed." She received one application of radium on August 1st, 300 mil. Curies to the canal, and 120 to the cervix, for 12 hours.

She was given the same mixture as Mrs. F. L. A. and the "green card diet," and

the injection of carbolic acid and biborate of soda. Briefly, to report further, on September 30th it was recorded that she had improved every day; she had gained steadily, and again on September 30th that she had improved every day. She had a good appetite and was getting back her strength, and seemed "quite like herself again."

On October 20th Dr. Janeway reported that Mrs. H. F. J. was "free from disease, although the healing is not quite complete." This is, of course, a very recent case, but the progress has been so satisfactory that in view of the former case and the results so often obtained when all proper measures are carefully carried out, there is reasonable expectation that this will also result in a cure.

I will not dwell longer on carcinoma, though if I had time I could relate many other interesting and instructive cases, showing satisfactory results of treatment.

My experience has naturally been principally with the disease as it affects the breast, and many of the patients affected elsewhere I have seen in consultation, or only a few times, though some have been faithful to prolonged treatment.

But if the thesis which I have tried to establish in these and my former lectures is correct, then sooner or later we will be able to apply the same principles, more fully developed and more perfectly adjusted, to cancer in other locations. And as the public and profession are better educated along these lines patients will apply earlier, and the pre-cancerous constitutional relations will be recognized and treated before the cancerous mass has gained such headway. There can be little doubt but that the same principles of treatment and prophylaxis apply equally to the cancerous process wherever the primary lesion has first developed.

Sarcoma.—Of the 36 cases of sarcoma,

of various types and in different situations, which enter into our list of malignant neoplasms, very few can be mentioned as illustrations of the value of dietary and medicinal treatment; many of them were seen only in consultation, or once or twice, and it is very difficult for those afflicted with such affections to be persuaded of the value of prolonged internal treatment when surgery apparently offers such brilliant immediate results.

But there is one patient with sarcoma of the upper jaw, whom you saw a while ago in an ulcerative condition, with a great hole in the cheek and a cavern within, whose improvement is so phenomenal that I now present her to you again to-day, as she is about to leave the hospital, after a little over four months' stay.

Case IX.—Miss R. L., aged 19, entered the New York Skin and Cancer Hospital, in my service, July 24th, 1916, weighing 89½ pounds. She had formerly weighed

120. About three years ago a small lump developed beneath a pigmented mole which had long existed, an inch or so below the right eye. This grew rapidly until it was about an inch in diameter, and was movable and painless. About January 1st a tooth in the right upper jaw became loose and three teeth were extracted; a radiograph was taken, and she was advised hospital treatment. She then entered another hospital and the gum was incised and radium applied for 18 hours on March 1, 1916. After this operation the face became swollen and very painful, and an extensive operation was performed in May, the right upper maxilla being removed, together with the tumor. Four weeks before entering the New York Skin and Cancer Hospital a pin hole opening was noticed in the scar on the cheek, which increased in size up to the time of admission. She remained in that hospital until she came to us. The microscopic examination of the

portions removed showed the disease to be sarcoma.

On entering the hospital there was an opening in the right cheek something over an inch in diameter with ulcerated edges, and a cavity extending down to the tongue, the superior maxilla having been removed surgically. From the upper margin of the opening there was a mass of dead bone hanging, nearly three quarters of an inch long by half an inch wide. The interior of the cavity presented a mass of ulceration, giving forth a foul odor. She was thin, pale, and anemic with 85 per cent hemoglobin and 3,620,000 red blood corpuscles.

She was placed on an absolutely vegetarian diet (green card) and began with the same mixture as the cases of carcinoma mentioned. The cavity and opening were kept packed with absorbent cotton, saturated with the following solution: ℞ Acidi Carbolici ʒss, Listerine ʒi, Liquor sodæ

chlorinatæ ℥i, Glycerin ℥ss, Aquæ hydrogenii dioxidi ad ℥iv, M., changed several times daily. Under this treatment there was almost from the first a remarkable change in her condition. The discharge ceased shortly and also the foul odor. Within a few weeks the cavity and edges of the opening showed a healthy condition and evidences of cicatrization could be seen. The tongue of dead bone, which was soaked several times daily with muriatic acid, separated entirely within three months, leaving a healthy granular surface. By the end of four months the entire edge of the opening on the face had cicatrized perfectly, and the interior appeared in a healthy condition, with no ulceration whatever, as you saw when she was presented the second time, a few weeks ago.

From the first her general condition improved and she began to gain weight, even several pounds a week, being weighed every week in the same hospital wrapper,

by several nurses, who took great interest in the case. I could hardly believe that she weighed 128 pounds on a Monday, as reported, and on the following Wednesday I weighed her myself and found that she weighed 130, which was quite a little over that called for by her height and age, and ten pounds more than she had ever weighed before. She had been taking for some time pyrophosphate of iron, five grains after eating, in addition to the mixture mentioned, which had hardly been changed since she entered.

The blood, which was carefully studied weekly, steadily improved until, on September 18th, the hemoglobin stood 95 per cent, with 4,600,000 red blood corpuscles and 8,000 white, and on November 10th the hemoglobin reached 100, and the red corpuscles 4,700,000. The urine, which presented albumen and granular casts on admission, had lost these, and on November 10th she passed 1,000 cc., with a specific

gravity of 1.025, and normal in every respect, except a faint trace of indican.

You will now, however, be specially interested when you see the change which has been wrought in her face by Dr. Semken, one of our attending surgeons, who performed a plastic operation on her, beginning Nov. 14, with the preparation of a flap on the right arm. This flap was lined with a Thiersch skin graft from the leg, so as to secure a proper mucous lining in the mouth, and left *in situ* until Nov. 24, when it was attached to the face, after the scar tissue had been cut away. The arm was held in place by a plaster of Paris dressing until yesterday, when the attachment to the arm was finally severed, after several partial separations. The skin graft took from the first, without any drawback, and now you see the opening entirely and perfectly covered. You will notice that the ectropion, which was so marked when you first saw her with the

ulcerating surface, has about disappeared, and Dr. Semken believes that there will be still further improvement in this respect.

I must not keep you longer, though I should have liked to narrate other cases of carcinoma in other locations which are of interest. I trust, however, that you have heard and seen enough to be quite satisfied as to the correctness of the principles I have tried to lay down, and also as to the success following their proper and careful application. How far they will serve for cancer in general, as it affects various organs and parts of the body, remains to be seen, when many others have reported their results. Whether also this line of thought will apply to sarcoma in general remains to be seen, for sarcoma is really of much the same nature of malignant cell growth, only affecting the connective tissue elements instead of the epithelium.

In closing I must again remind you that it is no trifling matter to undertake the

treatment of cancer by dietary and medicinal means, even though from what you have seen and heard you may think otherwise. Each case requires the utmost careful study and adaptation of remedies as may be indicated to bring the patient into a condition of perfect health. Diet alone will not accomplish this, but without the proper diet, as already indicated, all other efforts are unavailing to check the dire disease. With the proper carrying out of every detail the success is certainly much greater than with surgery, and with advancing knowledge and practise along these lines we shall undoubtedly see a satisfactory diminution in the deaths from cancer, whose death rate has so steadily risen under the measures heretofore employed.

SUMMARY

THE REAL CANCER PROBLEM [1]

Cancer has long been a problem over which master minds have wrestled, and to read much that is written it would seem that we were yet as far from its solution as ever. Countless able men, at the expense of millions of dollars, have labored faithfully in the laboratory, and it may safely be said that more effort and time have been expended in investigations on cancer, and more has been written concerning it, than ever in connection with any other disease affecting humanity. And yet

[1] This address, which has been delivered before several medical societies, is added as giving a summary of the subject elaborated in the first volume and this one. It presents the argument more concisely and definitely than occurs in any single lecture, and may thus aid in properly understanding the whole matter.

its mortality is steadily increasing pitifully, in spite also of active, skilful, and faithful surgical treatment.

Is it not possible, therefore, that there is something wrong in our conception of cancer and its treatment? If any other disease presented such a steady and alarming increase in its death rate would we not stop and consider if our treatment were the best possible? If with the introduction of antitoxin the mortality from diphtheria had steadily risen until it was about 90 per cent of all cases, would we persist in employing it? And yet the profession and the laity go blindly on, with the idea that surgery offers the only hope of reaching cancer, when the Mortality Statistics of the United States show that under this line of treatment the death rate has *risen steadily* from 63 per 100,000 of the population in 1900 to 81.1 per 100,000 in 1915, or 28.7 per cent.

Surely the lesson taught by the steadily

and greatly *decreased death rate* of tuberculosis should teach us something of the value of most careful dietary, hygienic, and medical control of other diseases. For the great white plague, which a while ago threatened even the destruction of the race, shows now a mortality which has steadily *fallen* 27.8 per cent since 1900, and that even with the continued presence of the tubercle bacilli. I realize that the comparison is not quite correct in all respects, for it is well established that cancer is not due to a microörganism; but it does show us that nutritive errors are at the bottom of the ravages of tuberculosis, and efficient biochemical studies in cancer have satisfied many that the same, although different in character, are true of this disease.

In other words, erroneous nutrition, which is productive of disease of the kidneys, heart, and blood vessels, with their steadily rising mortality of ten to twenty

per cent since 1900, as shown on the chart before you,[2] is operating to steadily increase also the morbidity and mortality of cancer, in spite of active and intelligent surgical treatment. And yet the profession and laity seem to be blind to this fact.

It is also not a little remarkable that during the year 1915, when there was a special effort made to educate both the laity and the medical profession in regard to the advisability or necessity of early operations in cancer, the actual death rate rose by 1.7 persons per 100,000 living, whereas the average yearly rise for the preceding five years had been only 1.2 persons per 100,000!

What, then, is the real problem of cancer? Surely it is not to increase the surgical activity, which has resulted only in a steadily ascending scale of mortality, which in reality is greater than that observed in any other malady! For the in-

[2] This chart appears opposite page 87.

crease in the death rate from cancer throughout the United States from 1900 to the present time has been coincident with the greatest activity both in laboratory research, and in the advanced surgery of the disease. I repeat, is it not time for us to stop and consider whether our laboratory work with the microscope on morbid tissues, and our experimentation on rats and mice are truly serving to solve the real problem of cancer? Or whether we had not better turn our attention to human beings, and by careful clinical study of our patients, discover where the fundamental error lies, which first induces the formation of an aberrant cell mass, which we call cancer, and then continually feeds it by the same deranged blood stream, so that it becomes utterly uncontrollable and invades and destroys other tissues; while at the same time the anemia, pernicious and progressive in character, gradually saps the life of the patient to a lethal end?

For repeated and most careful laboratory studies have demonstrated great and significant changes in the blood in cancer. I hope to satisfy you that the mass which is excised is only the *product* of a far deeper systemic change, which has probably already produced other, more or less similar masses or deposits elsewhere—in the bones and internal organs or lymphatics. So that surgical removal of the one often stimulates the development of others.

It is seen, then, that it is here denied that the local lesion which we call cancer is the first and only cause of disease. It is also denied that the surgical removal of the offending lump and adjoining glands and tissues, however early it is performed, is a sure and only cure for cancer.

In the recent cancer propaganda, urging the very early and complete removal of everything which could possibly be called pre-cancerous, it is interesting to observe

that most of the pictures shown and arguments presented relate to cutaneous epithelioma, which the United States Mortality Statistics show to be the cause of only 2.7 per cent of all deaths included under cancer! Moreover, those of us who see epithelioma daily know that, if properly treated early by other means than the knife, it is commonly a relatively innocent affection. It is acknowledged, however, that by meddling and wrong treatment, as with nitrate of silver, it can be goaded on so as to become a serious affair. In our present consideration of cancer as a disease it is to be understood, therefore, that cutaneous epithelioma is excluded, and that reference is made to the serious malignant disease known as cancer, affecting various other organs of the body. However, many cases of what might be called epithelioma of the lip and oral cavity are of such malignity that they are properly ranked as carcinoma.

Looking at cancer, therefore, as a general disease of which the local lesion, which is ordinarily excised surgically, is simply the result or product of a previous, perhaps long-standing, blood or nutritive disorder, we can readily understand why the simple excision of the tumor and surrounding tissues cannot be expected to eradicate the malady permanently. We can also see why the disease recurs so readily in the scar tissue after operation; for all recognize and admit that cancerous degeneration is apt to develop on any scar tissue. It is also well known that occasionally a tumor which after removal has been proved microscopically to be only a simple adenoma, has eventually been followed by true carcinoma in the cicatrix or elsewhere, under the stimulation of surgical procedure.

Metastatic development, after or without operation, can also be readily understood on the ground of the disease being a constitutional disorder. For, as far as

I have observed, there is seldom or never any continuous attempt made after an operation to alter the dyscrasic condition producing the tumor, but the patient is dismissed with the vain hope that there will be no more trouble. It is quite natural, therefore, that the transference of cancerous cells by the lymphatics or blood vessels, will form foci which are readily made to grow further by the vitiated blood stream.

Regarding, then, cancer as a systemic disease, of which the tumor is but a local expression, often or perhaps always the result of local injury or irritation, possibly of one or more "embryonic rests," let us briefly review the evidence in support of this view, and the measures found successful in combating the basic cause of the disease.

First let me remind you of the *negative* and *positive* results of laboratory and other study, which are pretty well con-

ceded by those who know most about the disease; and in presenting these I cannot do better than to quote what I have collected in a former article.[3] There are eight of these in each group.

1. Clinically and experimentally cancer is shown to be *not* contagious or infectious; although under just the right conditions certain malignant new growths can be inoculated in some animals of the same species, but not in other species, and human cancer cannot be transplanted on animals.

2. Although microörganisms of many kinds often have been found and claimed as the cause of cancer, there has been no concurrence of opinion in regard to them, and it is now pretty conclusively agreed that cancer is *not* caused by a microörganism or parasite.

3. Cancer is *not* wholly a result of traumatism; although local injury may have

[3] Bulkley: *New York State Medical Journal,* 1916.

much to do with its development in some particular locality, even as in connection with the late lesions of syphilis.

4. Cancer is *not* hereditary in any appreciable degree; although some tendency in that direction has been demonstrated in certain strains of mice.

5. Occupation has *not* any very great influence on the occurrence of cancer; although it is more frequent in some pursuits than in others.

6. Cancer is *not* altogether a disease of older years; although its occurrence is decidedly influenced by advancing age.

7. It does *not* especially belong to or affect any particular sex, race, or class of persons.

8. Cancer is *not* confined to any location or section of the earth, but has been observed in all countries and climates.

But while laboratory and other investigations have not demonstrated any single cause of cancer and have yielded only nega-

tive results, they have, by elimination, cleared the way for a study of its cause along other lines, which are bright with promise. They have also established certain facts which confirm the views which from time to time have been briefly expressed by many who were best acquainted with cancer; namely, that, because of its constant recurrence, and from the failure of surgery to check its rising mortality, it must be of a constitutional nature, intimately associated with dietary or nutritional elements, as I have elsewhere shown.[4]

The *positive* results of laboratory investigation are more encouraging:

1. We know now that the local mass, which we call cancer, represents but a deviation from the normal life and action of the ordinary cells of the body. These once normal cells, for some as yet unexplained

[4] Bulkley: "Cancer, Its Cause and Treatment," Hoeber, 1915.

reason, take on an abnormal or morbid action, with a continued tendency to malignancy which invades and destroys contiguous tissue, and is associated with a progressive anemia which destroys life.

2. Microscopic study has shown that there is a certain change in the polarity of cells about to be cancer-genetic, with an altered relation of the centrosome to the nucleus. These changes have been well attributed to an alteration in the enzyme contained in the cell, which further depends on the nutrition of the cell as influenced by a faulty metabolism of food elements.

3. The exclusion of all other possible causes leads us naturally to look to a disordered metabolism as a cause of the disturbed action of the hitherto normal cells; and we find much to confirm this view both in laboratory studies on the biochemistry of cancer, and also in clinical and statistical observations.

4. The blood in advancing cancer has repeatedly been shown to exhibit many manifest changes, which indicate vital alteration in the action of the organs which form blood, and so control the nutrition of the body and its cells.

5. Laboratory and clinical evidence demonstrate that the secretions and excretions of the body, both in early and late stages of cancer, exhibit departures from normal which deserve consideration. Although not one of these has as yet been established as pathognomonic of cancer, they all indicate metabolic disturbances which influence the nutrition of the cellular elements, and so these secretory and excretory disturbances are of importance in connection with its causation.

6. As all healthy cells of the body, by their catabolism and anabolism contribute a hormone or something to the general circulation, so experimental evidence shows that the cells of a cancer mass itself, when

fully developed, secrete a hormone or something which is poisonous to animals, and which probably hastens the lethal progress of the disease.

7. Repeated laboratory experiences have demonstrated, in a most remarkable manner, the absolute controlling effect of diet on the development of inoculated cancer in mice and rats, so that the process was inhibited almost entirely with certain vegetable feedings.

8. We thus see that as the laboratory has eliminated the local nature of cancer, it has also, in a measure, established the fact that there are medical aspects of the disease which further studies will show to be of the utmost importance. These all tend to demonstrate its constitutional origin, that is, its relation to deranged metabolism, which is now recognized as the basis of so many diseases of more or less serious character.

But clinical and statistical studies come

in with overwhelming force to confirm the correctness of this position.

1. We have already seen that with utter medical neglect the death rate of cancer has steadily and greatly increased in the United States, of late years, in spite of the prodigious advances of surgery during the same time. This is also true in all the countries from which we have any accurate statistics. We know also that tuberculosis, as a result of careful medical attention, has decreased in mortality by almost as great a percentage as cancer has increased. The same is reported by reliable observers all over the civilized world.

2. Any number of observers, in many lands, have recorded the almost entire absence of cancer among aborigines, living simple lives, largely vegetarian; they have also shown the definite increase in the disease, and in its mortality, in proportion to their adoption of the customs and diet of so-called modern civilization.

3. This increase of cancer mortality seems to depend largely upon the altered conditions of life attending advanced civilization, particularly along the lines of self-indulgence in eating and drinking and in indolence.

4. Statistics from many countries show that increase in the consumption of meat, coffee, and alcoholic beverages, appears to be coincident with a very great and proportionately greater augmentation of the mortality from cancer.

5. Clinical observation has time and again shown the effect of specific nerve strain and shock in the development of cancer; and there seems to be little question but that the enormous nerve strain of modern life is an element of importance in this direction, both through metabolic disturbance and by direct action on living cells.

6. At present no clear demonstration is possible of the direct method by which er-

rors of metabolism effect the changes in cells to which we give the name malignant, any more than we know how other alterations on the body are produced; such as arterial degeneration, bone changes, obesity, etc., which are recognized as due to metabolic derangement.

7. The results which have been observed in connection with the starvation of cancer, by ligature of vessels, illustrate the relation of the blood supply to growing cancer.

8. Finally, the repeated observation and report of the spontaneous disappearance of cancer, by careful and competent medical men, shows that conditions of the system may arise which are antagonistic to malignant growth, even when it has begun to take place; just as there are other conditions of the system which favor the aberrant action of previously normal cells, resulting in cancer.

The medical aspects of cancer thus loom

large, and appear in quite a different light from that in which they have been commonly viewed. We now begin to see some of the reasons why cancer is not primarily a surgical disease, and some of the lines along which observation and investigation should proceed; namely, biochemistry, secretory and excretory derangements, metabolic disturbances, diet, etc., etc. The subject is too new a one to afford a great amount of corroborative proof at present, other than the long personal experience of the writer and others, who have seen tumors disappear under means other than surgical, X-ray, and radium. More clinical and laboratory investigations of human beings are needed, and not simply microscopic studies and experiments on animals, valuable as these have been in the advancement of medical science in connection with other diseases.

We will now consider briefly some of the practical points in regard to the successful

treatment of cancer by means other than the knife. I will not take time to review or even to mention the various methods and means which have been proposed and advocated for the cure of cancer, only to end in disappointment for the reason that they did not reach the basic cause of the complaint. The very multiplicity of the suggestions proves their futility.

The line of thought and practise to which I would devote your special attention is not entirely new, but has been hinted at by many careful observers during the past hundred years or more, though it has never before been fully developed or strongly urged. But the experiences of over forty years, together with much study, has so convinced me of the correctness of the principles and practise which I advocate that I cannot too strongly urge you to consider them fully and without bias, and to put them to a satisfactory test, although I quite realize that they are contrary to the gener-

ally accepted views of the profession and laity.

The fundamental principle of my thesis lies in the fact that with the so-called advance of modern civilization, certain diseases, for the last fifteen years at least, have showed a steadily increasing mortality. The deaths in the United States from apoplexy, nephritis, and heart disease have steadily increased over ten, fifteen, and twenty per cent respectively, and those from cancer 28.7 per cent. We all realize that the results in the three former diseased conditions are from errors in the mode of life, including eating and drinking, and indolence, and careful study shows that cancer has the same origin. On the other hand, as already stated, the deaths from tuberculosis have steadily declined 27.8 per cent under rational medical treatment, directed mainly along the lines of correct nutrition: the death rate of tuberculosis and cancer have thus approached

each other 56.5 per cent, and at this rate in fifteen years more the mortality from cancer will exceed that from tuberculosis!

Careful and prolonged studies of cancer patients, both in the earlier and later stages of the disease, as I have recorded elsewhere,[5] show that there are always departures from normal metabolism, as is shown by the condition of the blood, and in the excretion from the bowels, kidneys, and skin, and in the salivary and hepatic secretions, and possibly in those of the ductless glands. Time does not permit here of elaborating this subject, which has been done elsewhere, but it is evident that some combination of internal systemic disorders must be recognized as the basic cause of the complaint, although at the present time it is difficult to point to a single causative element, if, indeed, it will ever be discovered.

[5] Bulkley: "Cancer in Relation to Body Elimination," *New York Med. Jour.*, July 3, 1915.

But a broad view of metabolism and nutrition recognizes that all cell changes, whether good or bad, depend on the character and composition of the blood furnished to the tissues, although little definite may be known concerning it. Thus, no one has demonstrated the single causative change in the blood in arteriosclerosis, gout, rickets, scorbutus, etc., but no one questions that it exists, and we direct our therapeutic measures accordingly, largely from experience.

The same is true in cancer. Most careful and prolonged study of the patient in every respect has shown a certain uniformity in regard to particular deviations from health, the correction of which has been followed by a complete disappearance of tumors classed as malignant, so that the connection must seem obvious to an unprejudiced mind. And yet it cannot be claimed that the exact, single cause of the cancerous growth has been demonstrated,

and from the nature and character of the systemic disorders found, it is evident that there can never be any single remedy which can be rightly claimed as a cure for cancer.

But that cancer can be cured by medical means and without the knife is absolutely certain, as the experience of many testify, and as the writer has observed in so many cases during the past 30 and more years. Many of the instances in the hands of others have occurred unexpectedly, and without definite or careful study and record of the measures employed. But in some way the condition of the blood and system has become altered so that there has occurred a retrogressive process which resulted in the absorption of the tumor. I may say that this was the case in regard to the earlier patients in my own practise, when I observed that tumors of the breast, which had been diagnosed as cancer by surgeons, disappeared under dietetic and other measures given for some skin affec-

tion; later observation and study have crystallized my views and confirmed my methods of procedure, which I hope to make plain, as briefly as possible, lack of time to explain everything must make me a little dogmatic.

An absolutely vegetarian diet is the first requisite in the treatment and prophylaxis of cancer, for, as mentioned, this has been found experimentally to inhibit, often to a remarkable degree, the production of artificially produced cancer in rats and mice, and experience throughout the world has shown cancer to be extremely rare in vegetarians. This diet, which should be maintained indefinitely, must be rigorous and absolutely vegetarian, excluding animal protein, even eggs and milk; butter is the only article allowed which does not grow, and of this one quarter of a pound is to be taken daily, by a person weighing 150 pounds. Cereals are to be freely employed, eaten slowly, with a fork, and with butter,

and not with milk and sugar, though the latter may be used moderately, where it seems necessary and where it perfectly agrees with the patient.

Perfect mastication, with thorough insalivation, is very essential, and I insist on at least half an hour being taken for even the lightest meal. Coffee, chocolate, and cocoa are excluded from the diet, only weak tea being allowed, with some postum or other artificial substitute for coffee.

Alcohol in each and every form is absolutely excluded, as it always has a very harmful effect on cancer. Sufficient water, not iced, should be taken to answer to the needs of the system, and I commonly give half a pint with each meal, and half a pint, hot, one hour before both breakfast and the evening meal.

Cancer being a disease of advancing civilization, with all its temptations and errors in living, it is essential that the cancer subject lead a very simple and healthy life,

with regular hours of eating and sleeping, with a reasonable amount of exercise, and the avoidance of everything which could disturb normal metabolism.

There is, of course, no single medicine which can cure cancer, but proper medication plays a very important part in overcoming the disease and should never be neglected or interrupted in any case; indeed, one suffering from or threatened with cancer should be under the most careful medical guidance indefinitely, and this is especially true after the surgical removal of the tumor, or local manifestation of the morbid process, as Abernethy so strongly asserted, nearly a hundred years ago.

Medical treatment lies mainly along the lines of elimination, which is always found to be faulty, both by the bowels and kidneys. My records of large numbers of private patients show that there is imperfect intestinal secretion, both in the very early

stages and late in cancer, even before morphin is taken. Therefore I have long come to look upon intestinal auto-intoxication as a prime factor of causation, and lately Sir Arbuthnot Lane has spoken of cancer as a terminal result of intestinal stasis. This constipation, however, is not to be met with occasional purgatives, but by measures which will secure a good normal evacuation once or oftener daily. My principal reliance for this is cascara, in combination with other remedies, although I also very often give once a week, on alternate days, two good laxatives of blue mass, colocynth, and ipecac. Mineral waters, Russian oil, etc., are not desirable, and enemata are resorted to only in emergencies.

The kidney secretion in early and late cancer is always faulty. This does not refer to albumen and casts, or sugar, which are searched for but seldom found. But very careful and repeated volumetric analyses of its many normal ingredients re-

veal errors in its composition which are of significance and which serve as a guide in therapy. There is always a faulty nitrogenous partition, and in that of sulphur; indican is commonly in excess, often very greatly so, and the chlorids and phosphates and sulphates deranged. The urinary secretion will constantly be found to be extremely deficient, both as to the actual quantity passed in the 24 hours, and in its total solid contents, which are often hardly one half of that called for by the body weight of the patient; this I have verified by hundreds of analyses. As these errors are corrected by proper treatment there will be a coincident improvement in the vitality of the patient and in the tumor.

The remedy which I have largely relied on in these cases for many years is acetate of potassa, and it is interesting to note that Ross[6] of London claims that a cause

[6] Ross: "Cancer, Its Genesis and Treatment." London, 1912, p. 88.

of cancer is found in a disturbance in the mineral contents of the blood, and that there is a lack of potassa, and he gives as high as 90 grains of phosphate and carbonate of potassa in the day, with excellent results. I commonly give the acetate in combination with other remedies, thus ℞ Potass. acetatis ʒi, Tinct. Nuc. Vom. ɜiv, Ext. Cascara fld. ɜi-ɜiv, Extr. Rumicis radicis fld. ad ʒiv, M. Teaspoonful in water ½ hour before eating.

But in the long treatment necessary for these cases before the malignant growth has quite disappeared, and possibly for a good while afterward, there may be many remedies used with advantage to secure and maintain that healthy metabolism requisite to overcome the cancerous habit. Iron and arsenic, phosphates and strychnin, and even cod liver oil and many reconstructive remedies and measures may bear their share in overcoming this dire disease. Thyroid extract sometimes as-

sists materially in removing the malgrowth, but must be given with caution, and in connection with other proper remedies; for sometimes it will promote catabolism and disintegrate the diseased tissue faster than the emunctories can remove the effete products, and these may poison the system.

It has been difficult in a single address to present such a vast subject, which is more or less new to many, in a clear and concise form, and I fear that I have trespassed too greatly on your patience, and have yet only imperfectly made matters clear. But I shall be satisfied if I have excited your interest sufficiently to cause you to investigate the medical aspects of cancer, in which lies the real problem of its prevention and cure. Surgery has been tried faithfully by many brilliant and honest men, some of whom now and then acknowledge the failure of the knife to arrest the steadily increasing mortality from the

disease, which is now about 90 per cent of all those once attacked.

But I fully realize that there is danger in my strenuous advocacy of other lines of treatment, lest these should not be fully and perfectly carried out, with such intelligence, patience, and persistence, on the part of the physician and patient as is requisite to accomplish the end desired. For I must say that it is extremely tedious and tiresome to care minutely for these patients, who should be seen at least weekly, and even for months or years, with careful and accurate records, innumerable urinary and blood analyses, etc., etc.

On the other hand, however, we have the alternatives of leaving the patient to suffer and die, or to submit to a surgical operation with the expectation of recurrence in a considerable proportion of cases, attended often with greater suffering and final death.

My experience with the disease for forty

years or more in private practise, and for the last few years in my medical clinic for cancer, in the New York Skin and Cancer Hospital, and in the wards of the hospital, have so fully convinced me of the correctness of the views I have stated here and elsewhere that I cannot too strongly beg you to give them due consideration, and not simply to class them with the various passing claims and suggestions regarding cancer, which have so often proved illusory. For along the lines which I have presented lies the real cancer problem, as I can demonstrate by many cases more or less similar to those detailed in my little book.

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